FLIGHT
The AIRCRAFT ENGINEER & AIRSHIPS

First Aeronautical Weekly in the World. Founded January, 1909.

Founder and Editor : STANLEY SPOONER

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CONTENTS

	PAGE
Editorial Comment :	
Safety Devices	745
The First Year's Flying	746
Encouraging Airmindedness	746
Short "Sturgeon"	747
Private Flying	748
Light 'Plane Clubs	749
THE AIRCRAFT ENGINEER	750a
Airisms From the Four Winds	751
Death of Col. Nicholl	753
Safety Devices for Aircraft : By M. L. Bramson	754
Royal Air Force	755
Correspondence	756
Guggenheim Competition	756
Royal Aeronautical Society Official Notices	756
Imports and Exports	756

"FLIGHT" PHOTOGRAPHS.

To those desirous of obtaining copies of "Flight" Photographs, these can be supplied, enlarged or otherwise, upon application to Photo. Department, 36, Great Queen Street, W.C.2

DIARY OF FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in this list :—

1927

Oct. 30 **Aerial Meeting of Suffolk Aeroplane Club at Hadleigh Aerodrome.**

Nov. 3 **Joint Meeting. "High Speed Compression Ignition Engine Research." Mr. H. B. Taylor, before R.Ae.S. and I.Ae.E.**

Nov. 9 **"Commercial Air Routes." Air Vice-Marshal Sir Sefton Brancker, before Royal United Service Inst.**

Nov. 17 **"The use of the Wind Tunnel in the Prediction of Aeroplane Performance." Mr. R. K. Pierson, before R.Ae.E. and I.Ae.E.**

Nov. 24 **"Modern Developments in Aircraft Instruments." Maj. C. J. Stewart, before R.Ae.S. and I.Ae.E.**

EDITORIAL COMMENT.

"WHAT really matters is that we do seem to be getting on towards safety from the appalling risks following an involuntary stall." This concluding sentence of Mr. M. L. Bramson's reply to the discussion following the reading of his paper on "Safety Devices for Aircraft" sums up the general impression left upon those who attended the lecture. A number of "aids to flying" which can reasonably come under the head of safety devices were dealt with by Mr. Bramson, but there can be little doubt that the two which attracted most attention were the new Handley Page automatic slot, and the Savage-Bramson anti-stall gear. There appeared to be a tendency among those present to assume that the advent of the Handley Page automatic slot, whose function is to open automatically when either or both wing tips are stalled, would do away with the necessity for any stall-warning device. Mr. Bramson pointed out, quite correctly we think, that although a machine in the stalled condition might be under perfect control if fitted with the automatic slots, it would be losing height at a rapid rate, and thus it was rather important that the pilot should be warned that this was happening. As Mr. Bramson also pointed out, incidence is the basis for both the Handley Page automatic slots and the Savage-Bramson anti-stall gear, so that, presumably, there is a possibility of making the same incidence mechanism operate the slots and the stall warning.

Safety Devices

The daily press has got hold of the new Handley Page automatic slot device before the company was ready for publication, certain foreign patent questions being yet incomplete, and thus may have done a certain amount of harm. We do not propose to run the risk of adding to the difficulties of the Handley Page firm by publishing, this week, technical particulars of the new slot mechanism, but there can, we think, be no harm in mentioning briefly that the new slots are entirely automatic in action, requiring no attention from the pilot, are extremely simple mechanically, add but very little extra weight to a machine, and finally should not cost a great deal to

construct. Until the technical documentation can be published, there is little point in advancing claims, but it does appear likely that this new type of slot, which, by the way, is to be regarded as a control device, rather than as one for giving extra lift for a given area, may have very far-reaching results. The very fact that the mechanism automatically opens the wing tip slot when the angle of incidence exceeds a certain predetermined amount, and thus prevents the wing tip from stalling, should mean immunity from involuntary spins, and already it has been demonstrated that the machine can descend at a very steep angle, *i.e.*, in a stalled condition, while lateral control is still fully maintained.

Without going into technical details that might be undesirable at the present time, one problem seems to arise at once. Suppose the centre portion of a wing has stalled, but that the wing tip slots have prevented the tips from stalling. Under such conditions, it would appear that some rather unusual stresses might be thrown on the wing structure. How large these are likely to be can only be surmised at the moment. The lift distribution could, presumably, be ascertained for any particular wing by pressure plotting, but as this distribution would vary with different wings, there is probably a good deal of research work to be done yet before certainty on this point can be attained. However, the advantages in sight are so great that this part of the development work might well be undertaken by the N.P.L. In the meantime, one can only congratulate Mr. Handley Page on having evolved a device which may be of incalculable value to aviation.

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The First Year's Flying

It is with the very greatest pleasure that we are able to publish, in our Private Flying section this week, a most interesting article by the Duchess of Bedford on her first year's experience as a private owner of an aeroplane. When we first approached Her Grace with a request for an article, she replied that she was afraid that she could not undertake to write one, as nature had not seen fit to endow her with the gift of being able to express herself in writing. We ultimately did persuade Her Grace to attempt the task, and we are sure our readers will agree that few could have equalled the charming manner in which the Duchess of Bedford has told the story of her first year's flying. Not only FLIGHT, but British aviation in general, owes the Duchess of Bedford a great deal for her practical encouragement of flying. By her constant use of her aeroplane she is setting an example which undoubtedly, in the years to come, will be followed by many. What makes the experience of the Duchess of Bedford so valuable is that, having no "axe to grind," she has chosen flying because it offers the most comfortable and quickest method of travel.

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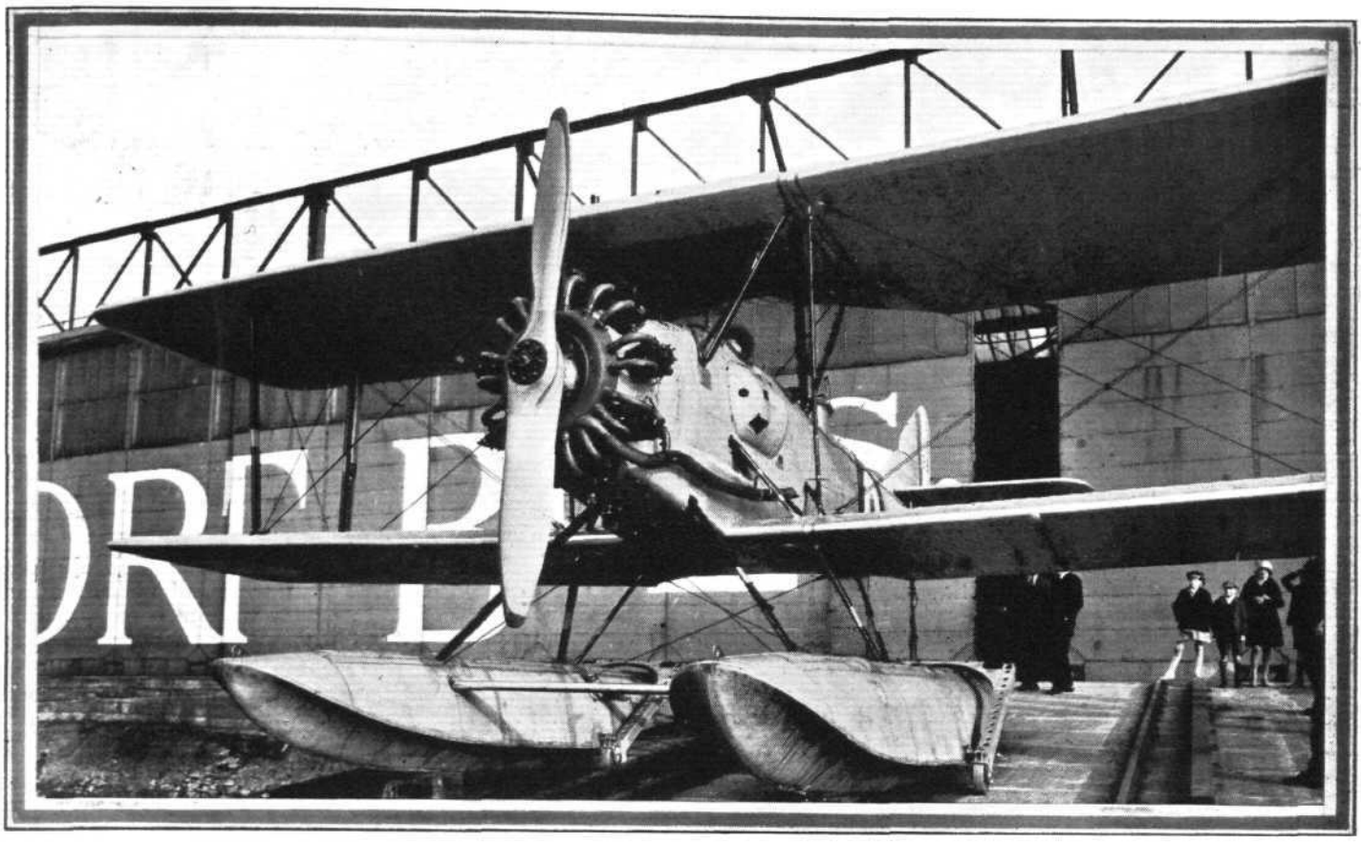
Encouraging Air-mindedness

We have received from a private owner a complaint which appears to be justified, and we therefore pass it on, in the hope that something may be done to remedy existing conditions. Our correspondent points out that at the Lympne aerodrome, although the huge hangars stand practically empty for 50 weeks in the year, a charge of five shillings per night is made for garaging even the smallest machine. As there is a permanent staff on the aerodrome, no matter whether the traffic is great or small, and as certainly the hangars are a long way from being filled, it would seem that the Air Ministry could very easily and simply assist the private-owner movement by garaging machines, so far as space allowed, either free, or for a nominal charge. The claim will probably be advanced that, as Lympne is used by the "air liners," it is undesirable to have a lot of private machines about. The cross-Channel traffic is not so intense—nor likely to be for the present—that this can be accepted as a sufficient excuse. Perhaps our energetic Director of Civil Aviation will look into the matter. He is the best friend private flying ever had, and we are sure that if it be within his powers, he will meet private owners in this matter.

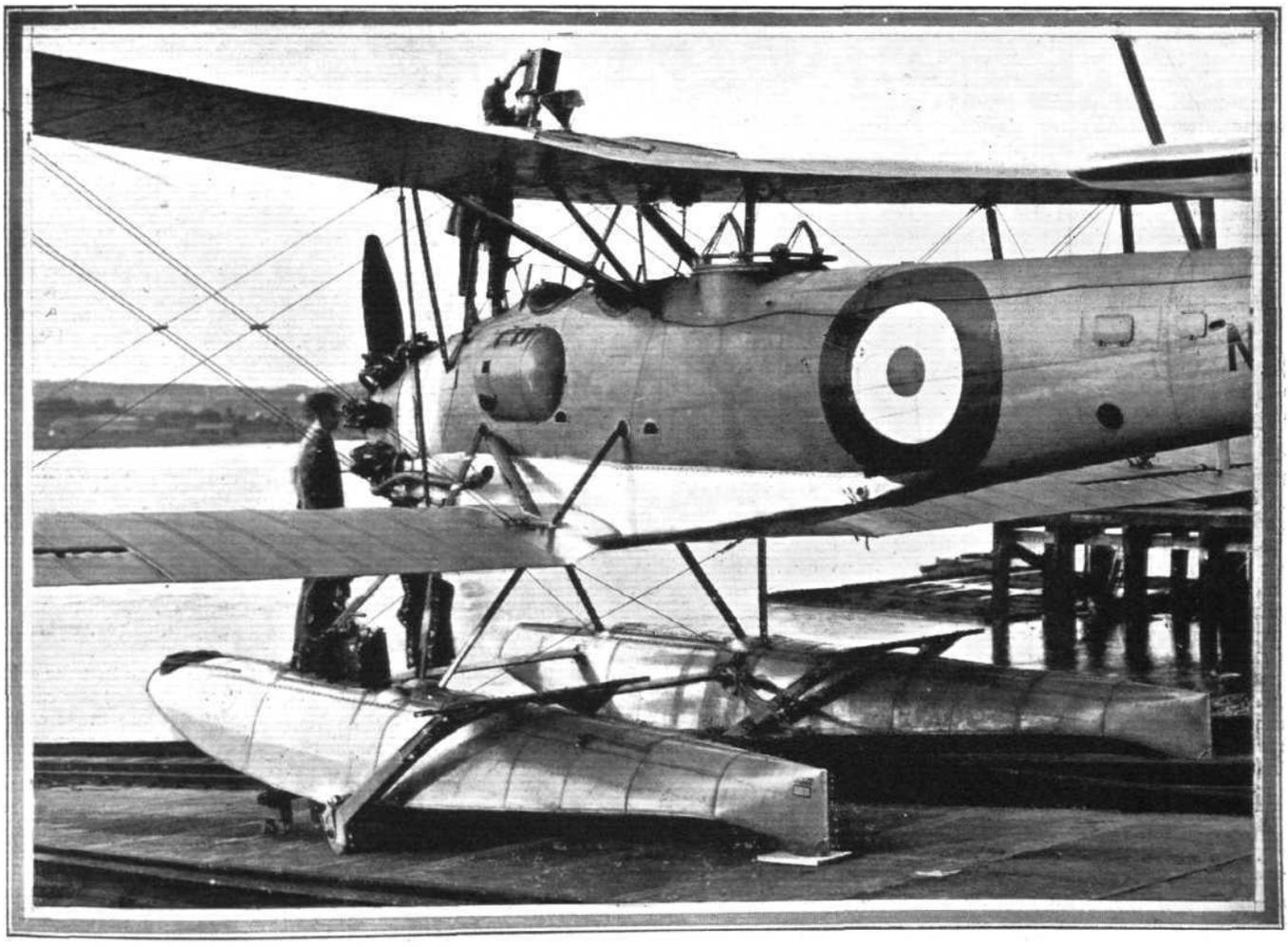


REFLECTIONS OF GOOD DESIGN: The Short "Sturgeon" is a three-seater amphibian Reconnaissance biplane of all-metal construction. It is fitted with a Bristol "Jupiter" radial air-cooled engine.

FLIGHT



The Short "Sturgeon" amphibian three-seater reconnaissance biplane. The engine is a Bristol "Jupiter."



THE SHORT "STURGEON": In this three-quarter rear view the shape of the floats is well brought out. Note the special small-wheel trolleys used for handling in shed and on slipway.

PRIVATE  FLYING

A Section of FLIGHT in the Interests of the Private Owner, Owner-Pilot, and Club Member

MY AIR EXPERIENCES

By THE DUCHESS OF BEDFORD

SOME time in the early 'seventies, as a small child, I was taken to see the wreck of a "flying machine," as it was then called, on the South Downs near Amberley. The designer was vaguely said to have flown "the height of a house" and then crashed and, overcome with disappointment, taken his own life.

I cannot claim that my interest in aviation dates from the spectacle of this sad little glider lying wrecked on the hillside, but neither did it act as a warning. Many years were to elapse, however, before I saw another flying machine, and then it was the aeroplane in which Blériot flew over the Channel. A few wiseacres said that, like Webb, he would be the last to do it. The War brought many aeroplanes and even an occasional Zeppelin over our quiet corner of the Midlands, and it was always considered the correct thing for friends to rush and tell me when they were within hearing. A very definite longing did then arise to try what flying would be like for myself.

But it was not to be supposed that those most interested in my remaining on earth would welcome this entirely new departure. The way had to be carefully paved with constant reiteration of my aspirations, gradually growing into definite expressions of a determination to try it. But how to try it I had no idea until a friend suggested "Imperial Airways." So in 1926 to "Imperial Airways" I went, with the request that they would provide me with a machine in which to fly from Croydon to my home. Their first suggestion of an enclosed machine not being at all in accordance with my idea of emulating the birds, we finally came down to the "Moth." "Imperial Airways," moreover, kindly volunteered to send somebody down to report on the landing ground, but said that a "Moth could land almost anywhere." But when that "somebody" reported later that the best landing-place seemed to be the garden immediately in front of the house, adding that in the event of the ground being wet, the tail skid might mark the lawn, I was a little puzzled at the accommodating ways of even a "Moth," for in no part of the garden is there a space of 50 yards clear of trees, ponds, fountains, bushes, or flower-pots. However, the only place I had quite definitely made up my mind that my pilot should *not* land me in was a large open paddock of many acres wherein roams a herd of American bison.

So to Croydon I went on a stormy afternoon, and was duly strapped into my "Moth." A long run all round the aerodrome to please my pilot, who preferred to rise up-wind, and then my dream of years was realised and for the first time I flew!

Now, those who do not want to fly generally have three very definite objections to it: they have no "head for heights," they do not wish to be air-sick, and they fear the feeling of coming down that one gets in a lift. To these I invariably reply that on earth I have no head for heights. I greatly dislike a narrow footpath on a steep hillside, the involuntary passage down which leads to broken bones. I cannot look over towers and precipices with any comfort, and do not greatly relish a ladder; but, for some reason I cannot explain, unless it be by the security of one's position (I do not allude to the strapping in, for I have only been strapped in on two occasions since), one feels nothing of this in an aeroplane. As to air-sickness, I have only been in an enclosed machine for very short flights, and though in the "Moth" my pilot has on one or two occasions remarked "A little more of that and we should both have been ill," we have had that little and more also later, and I was not air-sick. If he was, he was safely behind me and I was not aware of it. The motion of flying is so different from the endless monotonous rocking of the ocean wave that at present I have a clean bill of health. "*Qui vivra verra.*" Of the feeling as of descending a lift there is none, and I think that would only happen in involuntary descents.

What I Have Gained

And now for what I have gained by flying. Before the war I had a yacht, but the war took her and, fond as I am of seeing the world, journeys by train are anathema to me. Therefore, but for restricted travels by ocean liner and motor-car, I thought my travelling days were over.

My first long venture was to Scotland. Starting at my own time (no, my pilot's, for pilots are not punctual people, having too many irrefutable excuses to draw upon when in need), I arrived in a field close to my Scottish home in 3½ hrs.; less time than the train would have brought me. Visions of travel abroad once more seemed possible, and the spring of 1927 saw the little "Moth" starting on a trip of three weeks' unadulterated enjoyment to Tangiers, via Paris, Bordeaux, Biarritz, over the Pyrenees to Burgos, Madrid, Seville, Jerez and home by Malaga, Grenada, Barcelona, Lyons, and Paris.

The next flight of interest was to see the eclipse of the sun, and we really did see it! There was no necessity to go to the area of crowded hotels, for by rising a little earlier, we could fly into the zone of the eclipse from a less frequented neighbourhood. Nothing could have been more unpromising than our start in a fog which almost precluded the idea of flying at all, but in a short space of time we were wafted above the clouds to a height of 10,000 ft. There, in an absolutely clear sky, with a panorama of clouds below us, which did but add to the beauty of the scene, we had an uninterrupted view of the eclipse. Incidentally, it is fortunate that there is not to be another for 200 years, for obviously the sun was very cross about it, as he has hardly been seen in England since.

Once more in the summer a short flight was taken to Naples via Paris, Lyons, Turin, Verona, the Lido, and Rome, the return journey being made by the Riviera. We crossed the Alps at just under 14,000 ft., basked in the sun on the Lido, peeped down into the Coliseum, the Baths of Caracalla and the Crater of Vesuvius, revelled in a glorious view of the Bay of Naples at sunset, looked down upon the terrible forest fires then raging on the Riviera, and met the Mistral, which tossed us about like a feather. And all this in an eight days' flight of some 3,500 miles. At home, the little "Moth" has taken me many short flights for business and pleasure.

"But is not the scenery from an aeroplane terribly dull?" I have been asked by friends. If it is, then I am afraid I have one of the "little minds" which is "pleased by little things," for I never have a dull moment in the "Moth," from the time I leave the ground; no, not even over the coal fields and manufacturing districts of England; and as to the scenery, in many of our longer flights, it has been wonderful beyond description.

But why do I write all this for the readers of FLIGHT, who need no inducement to fly? I am reminded of an episode which occurred in one of my tours abroad.

Seated in the hall of an hotel, waiting for a car to take my pilot and myself to the aerodrome, an enthusiastic lady came up and introduced herself to me, saying that she must congratulate me on my flight, because it was "so brave and wonderful" of me to venture on it. I was just beginning to feel a little elated at the torrent of flattery which, out of the kindness of her heart, flowed down upon me, but I had an uncomfortable feeling that it was not making quite the desired impression upon the rather matter-of-fact and very experienced companion at my elbow. The suspicion was justified a moment later when, as she turned to leave, he remarked—"What an *extraordinary* idea! One would think you were the first woman to fly!"

In the language of aviation, I "flattened out."

So it is with all diffidence that I submit the record of my first year as owner of a "Moth," my only excuse being that I do so at the Editor's request.

FLIGHT
AIRCRAFT ENGINEER AIRSHIPS

LIGHT 'PLANE CLUBS

London Aeroplane Club, Stag Lane, Edgware. Sec., H. E. Perrin, 3, Clifford Street, London, W.1.
Bristol and Wessex Aeroplane Club, Yate, Gloucester. Secretary, Lieut.-Col. C. Fleming, Filton Aerodrome, Patchway.
Hampshire Aero Club, Hamble, Southampton. Secretary, Maj. Ross White, Hamble, Southampton.
Lancashire Aero Club, Woodford, Lancs. Secretary, C. J. Wood, Oakfield, Dukinfield, near Manchester.
Midland Aero Club, Castle Bromwich, Birmingham. Secretary, Maj. Gilbert Dennison, 22, Villa Road, Handsworth, Birmingham.
Newcastle-upon-Tyne Aero Club, Cramlington, Northumberland. Secretary, A. H. Bell, c/o The Club.
Norfolk and Norwich Aero. Club, Mousehold, Norwich. Secretary, H. O. Bennett, 5, Opie Street, Norwich.
The Scottish Aero Club Movement, 101, St. Vincent Street, Glasgow. Secretary, Harry W. Smith.
Suffolk Aeroplane Club, Ipswich. Secretary, Courtney N. Prentice, "Hazeldell," Stowmarket, Suffolk.
Yorkshire Aeroplane Club, Sherburn-in-Elmet, Yorks. Secretary, D. M. N. Coles, The Aerodrome, Sherburn-in-Elmet.

LONDON AEROPLANE CLUB

REPORT for the week ending October 23:—Flying time, 17 hrs. 5 mins. Dual, 15 hrs. 45 mins.; solo, 1 hr. 20 mins.

Dual instruction:—With Capt. F. G. M. Sparks: L. C. Davey, L. R. Winter, A. Fowler, M. P. Susman, Miss Wilson, G. W. Hall, Mrs. Russell, G. C. Bonner, A. J. Richardson, E. R. Andrews, H. B. Michelmore. With Capt. S. L. F. St. Barbe: A. Fowler, E. R. Andrews, Mrs. Russell, Capt. Burt, R. Hayes, T. S. Keith, L. R. Winter, H. J. Greenland, P. W. Hoare, H. Solomon.

We had four blank days owing to the weather.

D.H. "Moth" to replace G-EBKT.—It is hoped this week to take delivery of D.H. "Moth" G-EBNN to replace G-EBKT, which was crashed in August last.

BRISTOL & WESSEX AEROPLANE CLUB

FLYING report, week ending October 22:—Total flying time, 18 hrs. 50 mins. Instruction, 13 hrs. 30 mins.; soloists under instruction, 4 hrs. 5 mins.; passengers, 1 hr. 15 mins.

Instruction (with Mr. Bartlett): Miss Miles, Messrs. P. H. Bryan, Hon. H. C. H. Bathurst, M. L. Alexander, T. H. Clarke, A. H. Downes-Shaw, C. R. Greenhill, K. Patrick, C. E. Pitman, J. Pitman, H. A. Tiarks, R. A. Hall, J. H. Roberts, A. E. Stevens.

Soloists under Instruction: Miss Miles, Messrs. Hon. H. C. H. Bathurst, A. H. Downes-Shaw, R. A. Hall, J. E. Tratman.

Passengers: with Mr. Bartlett, Miss Thompson and Mr. Morris. With Mr. Hopper, Mr. B. E. Maggs.

Six new pilot members have joined during the last fortnight, making a total of 60 pilot members.

HAMPSHIRE AEROPLANE CLUB

REPORT for two weeks ending October 23:—Total flying time, 40 hrs. Instruction, 25 hrs. 35 mins.; soloists, 12 hrs.; joy-riders, 45 mins.; test flights, 1 hr. 40 mins.

Instruction (with Flight-Lieut. Thomson): Miss Home, Mrs. Willis, Mrs. Aitken Dick, Mrs. Andreae, Lieut.-Comdr. Evans Penman, Comdr. Hunt, Capt. Molyneux, M.C., Capt. Kirby, Lieut. Kidston, R.N., Lieut. Richardson, R.N., Lieut. Hall Thomson, R.N., Lieut. Mandeville, R.N., Flight-Lieut. Messenger, Capt. Kirby, Messrs. Cripps, Baynes, Hall, Grahame Gibbs, Boileau, Fawkes, Kerry, Brewster, Falconar, Nuthall, Dickson, Williamson, Whittle, and Stanford.

Soloists ("A" Pilots): Flying Officer Southey, Messrs. K. P. L. Bowen, E. I. C. Wyllie, and Fagan.

Other soloists: Miss Home, Capt. Molyneux, M.C., Messrs. Cripps, Falconar, Cooper, Fawkes, Shepherd, Parker, Whittle, Graham, and Stanford.

Joy-riders: (with Bowen) Miss Churcher, Mr. Lovatt; (with Wyllie) Mrs. Whedwright.

On Thursday Mr. Fawkes did his first solo on a Moth. He had previously flown solo once on an Avro in the Auxiliary Air Force. On this day, also, the Auto-gyros were being demonstrated before press representatives, with the result that most newspapers have been publishing photographs of the Hampshire Club Moths sitting on the ground whilst the new form of aircraft flew over their heads.

With regard to the appeal of the Suffolk Club for surplus furniture, we certainly have an opossum rug we shall be pleased to give to them if they will promise to treat it kindly. It has been "kennelled" in a damp room for many months and is therefore a trifle high, but any good vet. should be able to put it on its feet again. It is quite tame and will eat anything, especially fond of children.

Congratulations to the five members of the Norfolk Club who put in over ten hours dual between them last week, but what has happened to that interesting individual who used to figure in their reports as "flat turn Tommie"?

LANCASHIRE AERO CLUB

REPORT for week ending October 22.—Flying time, 17 hrs. 40 mins.; instruction, 8 hrs. 20 mins.; solo flights, 1 hr. 55 mins.; passenger flights, 5 hrs. 30 mins.; test, 1 hr. 53 mins.

Instruction.—With Mr. Brown: Messrs. Meades, Agar, Heath, Rowley, Sykes, Chart, Cort, Allott, Hope, Nelson, Miss Brown, Miss Baerlein. With Mr. Cantrill: Messrs. Nelson, Harber, Rowley, Ruddy, Browning, Cort, Miss Baerlein. With Mr. Scholes: Mr. Rowley.

Soloists (under instruction): Mr. Harber. Pilots: Messrs. Nelson, Costa, Twemlow, and Chapman.

Passengers.—With Mr. Lacayo: Mrs. Lees, Mrs. Webster, Miss Stott. With Mr. Scholes: Mrs. Jackson, France. Mr. Meades. With Mr. Twemlow: Messrs. Allott and James. With Lady Heath: Mrs. Cottam, Mr. Stott. With Mr. Cantrill: Mr. Stott. With Mr. Goodfellow: Miss Boston. With Mr. Williams: Mr. Ruddy. With Mr. Costa: Miss Dodd.

A week of dirty weather and a week-end of fog. Sunday was a day of very poor visibility, and what with four club kites in service and our Messrs. Hollingdrake and Dobson adding to the aerial congestion on a couple of "Avians," life was very 'ard. A number of pilots came down with very stiff necks, which subsequently required oiling in the club house.

P.S.—Owing to the bad weather, there has been no crashery this week.

MIDLAND AERO CLUB LIMITED

REPORT for week ending October 22.—Total flying time, 6 hrs. 24 mins. Dual instruction (with Mr. McDonough): J. H. Lattey, G. Robson, R. Darlington, E. P. Lane, S. Duckitt, Capt. J. C. Chaytor.

Solo: E. J. Brighton, C. Fellowes, E. R. King.

Passenger flight (with Mr. Willis): T. R. Lunt.

Passengers (with Mr. Brighton): R. G. Hall, J. M. Parkes.

General report.—Bad weather restricted flying.

NEWCASTLE-UPON-TYNE AERO CLUB

REPORT for week ending October 23.—Flying time, 26 hrs. 10 mins. Instruction, 8 hrs. 45 mins.; soloists, 3 hrs.; "A" pilots, 7 hrs. 20 mins.; pasengers and tests, 13 hrs. 05 mins.



To Australia by Light Aeroplane: Capt. W. N. Lancaster and his passenger, Mrs. Keith Miller, in their "Red Rose" before the departure for Australia from Croydon on October 14. In this Avro "Avian" they reached Pisa from Marseilles on October 19, and Rome and Naples the next day. On October 21 Catania in Sicily was gained, and Malta the following day. On October 24 the "Red Rose" reached Tripoli, North Africa. This "Avian" is fitted with the Cirrus 32/80 h.p. engine. Capt. Lancaster is an officer in the Air Force Reserve and his passenger is the wife of a well-known Australian journalist.

Instruction (with Mr. Parkinson): Miss Leathart, Miss Rambaut, Messrs. P. L. Lawson, C. T. Elmes, R. J. Dickinson, L. B. Dickinson, Griffiths, Mathews, Dr. Alderson.

Soloists: Mrs. Heslop, Miss Leathart, Messrs. Mathews, P. L. Lawson, Wilson, Elmes, Robertson, Shaw, C. Thompson, Turnbull.

Passengers.—With Mr. C. Thompson: Mrs. Heslop, Mr. Luckman. With Mr. Parkinson: Miss Wood, Mr. Murrell (of Aerofilms, Ltd., on photographic flight).

Mr. P. L. Lawson carried out his first solo flight on Tuesday in a very satisfactory manner.

All the above flying on G-EBQV. L.X. is expected back on service during the coming week.

Some interesting particulars of a scheme which is being formulated by Mrs. Heslop and Miss Leathart have leaked out.

The following is an outline of the scheme, no details being available for publication as yet. (This is strange, as one believed that the all-important item in such a stunt was the publicity).

A suitably-equipped ship will leave the west coast of England, and when five miles out the intrepid ladies will land upon it in a "Moth." Five miles from the coastline, somewhere on the other side of the Atlantic, the ladies will take off and complete their transatlantic flight.

The chickens are already being fattened, and supplies of lip stick obtained for use during interviews with the Press, during the flights, and on landing at the other side.

Mrs. Heslop and Miss Leathart are the club's first lady pilots to obtain their "A" licences.

NORFOLK & NORWICH AERO CLUB

REPORT for week ending October 23.—Flying time, 12 hrs. 30 mins.

Dual: Messrs. A. Cooper, R. Hare, C. Gowing, C. Bougrat, R. F. Potter, H. J. Finch.

Solo: Messrs. R. Harmer, R. F. Moore, H. Pank, W. A. Ramsay, W. Cubitt, F. Gough.

Passengers: Miss Eldridge, Messrs. J. Croskill, and A. Sutton.

YORKSHIRE AEROPLANE CLUB

REPORT for week ending October 22.—Flying time, 13 hrs. 20 mins. Instruction, 9 hrs. 55 mins.; soloists, 3 hrs. 25 mins.; passengers, 1 hr.

Instruction (with Capt. Beck): Miss Woodhead, Messrs. Humphries, Parker, Gouldney, Dane, Ellis, Crowther, H. Crowther, Gardiner, Thomson, Miller, Brackenbury, Ellison, Weaver, Ward.

Solo instruction: Messrs. Lax. Ellison, Lister.

"A" Pilots: Messrs. Brackenbury, Dawson.

Passengers.—With Capt. Beck: Mr. Coles. With Mr. Brackenbury: Messrs. Brown, Crowther.

When is a Metre not a Metre?

IT will have been obvious to our discerning readers that "metres" should have been "kilometres" on the scale of our map of Mr. Kittel's tour, published last week.

"Bluebirds"

THE Blackburn Aeroplane Company, who are the designers and manufacturers of the "Bluebird," which is such an excellent machine for private owners, have been concentrating on meeting their customers' demands for their machine rather than demonstrating it all over the country. For that reason we have not heard so much about it lately as those in the same class. Delivery has already been made to the Suffolk Aeroplane Club, who incidentally, are holding their first "Air Meeting" on October 30, when, no doubt, their "Bluebird" will be in action. During September the Yorkshire Aeroplane Club took delivery of three in close succession, and the North Sea Aerial and General Transport, Limited, of Brough, has one. Two others are now on the way to Brazil for private owners. Others in the course of production are for purchasers and the firm's demonstration purposes. Mr. Charles Blackburn is touring the South shortly with a "Bluebird," and will call on the Suffolk Club to assure himself of their progress. His headquarters will be near London, for there are a large number of interested enquirers in this quarter and they will have the opportunity of inspecting their choice.

Suffolk Aeroplane Club's Air Meeting

THE President of this new Club, Lady Bailey, will fly down to their first air meeting for Sunday, October 30. The London Club and the Yorkshire Club will also be represented. Wing-Commander Blackburn, of Martlesham Heath Experimental Station, and numerous others have promised their support. The Hon. Secretary, Mr. Courtney N. Prentice, points out that it is too late in the year for a pageant and so they are holding this small display to show that the Club is really doing some work. They deserve to be well supported on Sunday for they are really making admirable efforts without any official assistance. We wish them every success and particularly fine weather. The Club's aerodrome is at Hadleigh, Suffolk, and the meeting will start at 10.30 a.m.

A VERY WONDERFUL FLIGHT*

IT is impossible to read the Air Minister's account of his flight to India and back without becoming infected by his obvious enthusiasm for flying. Yet the book reveals no attempt at minimising the discomforts which were, must have been, encountered on a flight over such vast distances. If he makes little of the risks, Sir Samuel faced them with his eyes open, and he and Lady Maud Hoare did not start from Croydon on the morning of Boxing Day without having first received, and disregarded, numerous warnings from well-meaning friends. That the journey should have proved entirely successful is a testimony to the flying equipment used and to the skill and determination of the men who had the honour of piloting the distinguished passengers on this historic flight. In his book Sir Samuel Hoare pays a very warm tribute both to the personnel and to the machines and engines.

The introduction by Lady Maud Hoare adds a delightfully feminine touch in explaining how the problems of her personal equipment were solved, but like her husband Lady Maud makes little of the discomforts, and answers an emphatic "No" to the question as to whether the party was frightened during the flight. She does admit, however, that on the afternoon of the second day of the outward flight "it ceased to be of great interest whether they arrived at Naples or not." But on the one occasion when there probably was real danger they were "too much interested to be frightened."

The Secretary of State for Air throws a very human sidelight on his account of the preparations for the flight when he expresses fear that some trivial mishap might prevent the flight from being made. "Would it not," he says, "have been intolerable if, after all our preparations, a sudden attack of 'flu' or even an unromantic cold in the head had stopped our starting?" Fortunately no such incident marred the start, nor did a fog compel the party to postpone the start, as was at first feared.

As it turned out, the first portion of the flight was the most uncomfortable, but Sir Samuel and his wife were ever prepared to look upon the bright side, as is testified by the passage dealing with the crossing of the Mediterranean, which was accomplished in a storm. One of the destroyers stationed along the route signalled to the machine that its passengers might think it bumpy up there, but that it was nothing to what it was down on the sea. "As I saw the destroyer," Sir Samuel writes, "jumping about like a pea on a drum, I fully agreed with the Captain's observation."

One feature of the book which impresses one is the insight and understanding which the Secretary of State brings to bear in connection with the various countries over which he flew. After reading the book, one begins to understand not only why Sir Samuel Hoare chose the airway, but also why his appreciation of the enormous advantages of the personal element is so keen, and of the reasons for his faith in the utility of linking up the various parts of the Empire by air, so as to enable statesmen and business men to get in close personal contact, instead of having to rely upon the written word.

Of lighter touches there are many in the book, and Sir Samuel Hoare reveals a quiet sense of humour which those who only know him as the Secretary of State for Air may well be surprised to find. One little ancedote will illustrate this point. When the news of the departure of the party was announced, the Prime Minister is, Sir Samuel says, reported to have said: "What with F. E. winning diving competitions in Madeira, and Leo Amery ski-ing in the most mountainous regions up the Alps, and Sam Hoare flying to India, I feel like a circus manager whose performing fleas have escaped."

"India by Air" is splendidly illustrated by photographs, and appendices give a description of the "City of Delhi" (the de Havilland "Hercules" with Bristol "Jupiter" engines) which carried Sir Samuel and Lady Maud Hoare, a detailed log of the various stages of the flight to and through India, with explanatory notes on the country over which the flight was made, and full details of weather conditions, flying times, distances covered, and so forth. Quite apart from any added interest which the book may have because of the prominence of its author, "India by Air" is excellent reading, whether one is interested in flying or not.

* *India by Air*. By the Right Hon. Sir Samuel Hoare, Bart., G.B.E., C.M.G., with an introduction by Lady Maud Hoare, D.B.E. Longmans, Green and Co., Ltd. Price 6*s*. 6*d*. net.

The AIRCRAFT ENGINEER

FLIGHT ENGINEERING SECTION

Edited by C. M. POULSEN

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CONTENTS

PAGE

A Simple Theoretical Method of Analysing and Predicting Airplane Performance. By Ivan H. Driggs 63

The Reduction of Flight Test Data to Standard Atmosphere Conditions. By Lieut.-Col. J. D. Blyth, O.B.E., M.I.Ae.E. ... 64

Technical Literature 66

EDITORIAL VIEWS

With this issue of THE AIRCRAFT ENGINEER the article on "A Simple Theoretical Method of Analysing and Predicting Airplane Performance," by Mr. Ivan H. Driggs, comes to a close. It is regretted that it has been necessary to divide this article into three instalments, since this causes a certain amount of inconvenience for reference purposes. However, it is thought that most readers collect their numbers of THE AIRCRAFT ENGINEER as a separate volume, independent of FLIGHT, in which case it is only necessary to look through three numbers.

As regards the article itself, it is realised that it has been difficult for readers to express an opinion on the Driggs method until the entire article was published. Now that this is the case, it is hoped that British designers and others interested in the subject of performance will peruse the article carefully and, by giving us their views, give readers of THE AIRCRAFT ENGINEER the benefit of their intimate knowlege of the subject. Apart from the question of whether or not the Driggs method is rational and logical, and to be regarded as sufficiently accurate for general use, we think it will be agreed that the information concerning American aircraft which is given in the course of the checking of the Driggs method is of very considerable interest, and provides a number of performance figures which are very welcome at a time when in this country a great deal of secrecy surrounds the performance of British aircraft.

Lieut.-Col. Blyth contributes this week an article on "The Reduction of Flight Test Data to Standard Atmosphere Conditions." The method enployed is explained in detail, and also the basis upon which it works, while the chart enables one to reduce easily, rapidly and without the use of tables or calculations of any sort, observed data to conditions of standard atmosphere. The standard atmosphere used by Col. Blyth is that employed in America, which is based upon relative density and pressure being taken as unity at a height of 0 ft., at which altitude the temperature is 15° C. and the pressure 29·92 in. of mercury.

Mr. J. D. North has, we regret to say, been indisposed recently, and has not, therefore, been able to contribute his final article on "Aircraft Performance."

A SIMPLE THEORETICAL METHOD OF ANALYSING AND PREDICTING AIRPLANE PERFORMANCE.

By IVAN H. DRIGGS.

(*Concluded from p. 62.*)

Example II.—X — CO — 6 Airplane.

Case I is used.

Data :—

Total weight	...	...	...	4,563 lbs.
Wing area (R.A.F. 15)	...	...	...	500 sq. feet.
Span both wings	...	...	...	48 feet.
Gap	...	...	...	6 feet.
Power	...	...	...	420 at 1,700.
Profile drag of airfoil	...	...	...	0·000025.
A_i of structure (from detail analysis)	...			14·1 sq. ft.

$$\frac{\text{Gap}}{\text{Span}} = \frac{6}{48} = 0{\cdot}125$$

$K_i = 1{\cdot}1175$ from Fig. 2.

$$F_p = \frac{420}{4563} = 0{\cdot}092$$

$$F_i = \frac{4.563}{3(1{\cdot}1175 \times 48)^2} = 0{\cdot}529$$

$$F_r = \left(14{\cdot}1 + \frac{0{\cdot}000025 \times 500}{0{\cdot}00327}\right)\frac{1}{4563} = 0{\cdot}00392$$

High Speed.

For trial let $V_{des.} = V_{max.} = 120$ m.p.h.

$$e_{max.} = 1 - \frac{0{\cdot}425 \times 2{\cdot}735 \times 11{\cdot}94}{54{\cdot}5}$$

$$= 0{\cdot}745$$

$K_p = 1$ since $V_{des.} = V_{max.}$

$$\frac{F_p}{F_r} e_{max.} K_p V_{max.} - \frac{F_i}{F_r} = 0{\cdot}00000872\ V_{max.}^4$$

Let V = 60 m.p.h.

$$\frac{0{\cdot}092 \times 0{\cdot}745 \times 60}{0{\cdot}00392} = \frac{0{\cdot}529}{0{\cdot}00392} = 903$$

Let V = 100 m.p.h.

$$\frac{0{\cdot}092 \times 0{\cdot}745 \times 100}{0{\cdot}00392} = \frac{0{\cdot}529}{0{\cdot}00392} = 1{,}603$$

Plotting these two points as ordinates on this respective values of V as abscissæ and connecting with a straight line to intersect the curve of $0{\cdot}00000872\ V^4$ gives $V_{max.}$ as 123 m.p.h. Fig. 3.

Therefore $V_{max.} = 123$ m.p.h.

This is close enough to the estimated $V_{max.}$ and $V_{des.}$ that it is unnecessary to repeat the calculation.

Absolute Ceiling.

$$V_{MP} = 14\left(\frac{F_i}{F_r}\right)^{1/4} = 47{\cdot}6$$

$$K_p = \left(\frac{47{\cdot}6}{120}\right)^{1/2} = 0{\cdot}63$$

$$P_r^{3/4} = \frac{0{\cdot}095 \times 0{\cdot}62 \times 0{\cdot}251}{0{\cdot}092 \times 0{\cdot}745 \times 0{\cdot}63} = 0{\cdot}343$$

From Fig. 4.

Absolute ceiling = 21,500.

Rate of climb at Ground.

$$V_{cl} = 18{\cdot}4\left(\frac{F_i}{F_r}\right)^{1/4} = 62{\cdot}6$$

$$K_p = \left(\frac{62{\cdot}6}{120}\right)^{1/2} = 0{\cdot}722$$

$$R.C. = 33{,}000 \times 0{\cdot}092 \times 0{\cdot}745 \times 0{\cdot}722 - 3{,}588 \times 0{\cdot}62 \times 0{\cdot}251 = 1{,}635 - 559$$

R.C. = 1,076 ft./min.

These two examples illustrate the procedure to be used in the calculation of performance. Like all other methods, the accuracy of the final result depends upon the estimate of parasite. The computed performance of the XCO — 6 is probably somewhat high, due to the fact that Case I has been used. However, a slight reduction in A_p over that estimated might allow these figures to be equalled or even exceeded. Again, the percentage of motor power at ceiling may be lower than the average used.

APPENDIX I

PARASITE COEFFICIENTS OF VARIOUS AIRFOILS

From M.I.T. Test

40 m. hr. 36 × 6 Airfoils

Airfoil	Min. Prof. Drag	Ky. Max./ Min. Prof. Drag
R.A.F. 15	0·000025	104
U.S.A. 27	0·0000345	99·8
Goth 387	0·000041	89·3
Goth 430	0·000033	102·5
Goth 436	0·0000313	98
U.S.A. 35B	0·0000325	102·5
U.S.A. 35A	0·000044	85·5
Clark W	0·0000294	99
Clark X	0·00002895	99·8
Clark Y	0·0000269	118·2
Clark Z	0·000030	107·4
U.S.A. 16	0·0000229	119·5
N.A.C.A. 61	0·0000449	72·9
N.A.C.A. 77	0·000048	61·3
N.A.C.A. 81	0·0000348	77·3
N.A.C.A. 58	0·0000344	81·1
Curtiss C–27	0·0000249	94·8
Curtiss C–62	—	—
U.S.A. 17	0·0000278	95
U.S.A. 35	0·0000334	114·5
U.S.A. 45	0·0000276	120
Turm No. 1	0·000028	90
N.A.C.A. 73	0·000034	75
Goth 429	0·000035	64
Sloane 105	0·0000232	102·5

APPENDIX II

TOTAL PARASITE AREAS OF VARIOUS AIRPLANES

Airplane	F_r	W	A_p	$(A_p)_w$	(A_p) Structure
1L–1	... 0·00428	5,686	24·35	4·6	19·75
XB1–A	... 0·00376	3,590	13·5	3·1	10·4
PW–1	... 0·0031	3,005	9·3	2·05	7·25
MB–3	... 0·0035	2,548	8·9	1·9	7·00
XB–1	... 0·00387	3,679	14·2	3·1	11·1
JL–6	... 0·00375	3,605	13·5	(4·5)	(9·0)
VE–9	... 0·0037	2,269	8·4	2·1	6·3
D.W.C.	... 0·00336	7,216	24·25	7·32	16·93
CO–5	... 0·00306	4,193	12·8	4·7	8·1
CO–1	... 0·0039	4,751	18·5	(5·1)	(13·4)
CO–4	... 0·00324	4,493	14·5	(4·5)	(10·0)
V–40	... 0·0035	2,686	9·4	(2·6)	(6·8)
D–7	... 0·0035	2,462	8·6	(2·5)	(6·1)
MB–2	... 0·00567	10,363	58·8	(10·6)	(48·2)
PW–8*	... 0·00292	2,784	8·1	(2·0)	(6·1)
XB1–A	... 0·00333	3,988	13·3	3·1	10·2
Messenger	0·0064	862	5·5	(1·8)	(3·7)
PS–1	... 0·00344	1,673	5·8		
T–2	... 0·00292	7,993	23·4	(10·3)	(13·1)
D–8	... 0·00619	1,238	7·7	(1·1)	(6·6)
PW1–A	... 0·00375	3,075	11·54	(3·1)	(8·44)
PW–2	... 0·00414	2,788	11·54		
PW–2A	... 0·0038	2,799	10·63		
PW–2B	... 0·00354	2,976	10·54		
PW–9	... 0·00323	2,971	9·6	2·4	7·20
PW–6	... 0·00374	2,763	10·25		
USA–C11	0·00397	3,746	14·85		
DeH–4	... 0·00408	4,297	17·55	3·35	14·20
TA–1	... 0·00566	2,062	11·7	(3·1)	(8·6)
TA–2	... 0·00431	1,761	7·6	1·8	5·8
TA–3	... 0·00636	1,693	10·78	2·48	8·30
TW–1	... 0·00565	3,225	17·5	3·2	14·3
PW–7	... 0·00324	3,176	10·3		
US–Mail	... 0·00384	4,712	18·1	3·8	14·3
T–3	... 0·0044	8,950	30·8	8·0	22·8
TA–5	... 0·00665	2,215	14·75	3·05	11·7
TA–6	... 0·00546	1,954	10·6	2·2	8·4
SE–5A	... 0·00453	2,060	9·33	1·88	7·45
Orenco D	0·00536	2,820	10	2·1	7·9
TW–4	... 0·00621	1,967	12·2		
PW–8†	... 0·0025	3,151	7·9	(2·0)	(5·9)
Morane	... 0·00547	1,458	7·98		

Values of $(A_p)_w$ in parentheses are estimated.

* Low-compression motor.

† High-compression motor.

THE REDUCTION OF FLIGHT TEST DATA TO STANDARD ATMOSPHERE CONDITIONS.

By LIEUT.-COL. J. D. BLYTH, O.B.E., M.I.Ae.E.

The Reduction Chart accompanying this article has been prepared with the object of providing a rapid and simple method of reducing data obtained on flight tests to conditions of standard atmosphere.

As is generally known, atmospheric conditions are continually varying, with the result that the observed performances of the same aeroplane at the same aneroid height may differ considerably on different occasions. To enable comparisons to be made on a constant basis a standard atmosphere has been adopted, to the conditions of which flight test data are reduced.

There are at present two standard atmospheres; the first being that given in Chapter IX of Bairstow's "Applied Aerodynamics," in which relative density and pressure are taken as unity at a height of 800 ft.; and the second one in which the relative density and pressure are taken as unity at a height of 0 ft., at which altitude the temperature and pressure are 15° C. and 29·92 ins. of mercury respectively.

The second standard atmosphere has been universally adopted in America, and has superseded, to a great extent, the first one in this country, and is therefore the one to which this article refers. The reductions given by the chart correspond to those given by the method of calculation described in N.A.C.A. Report No. 216, which may be described briefly.

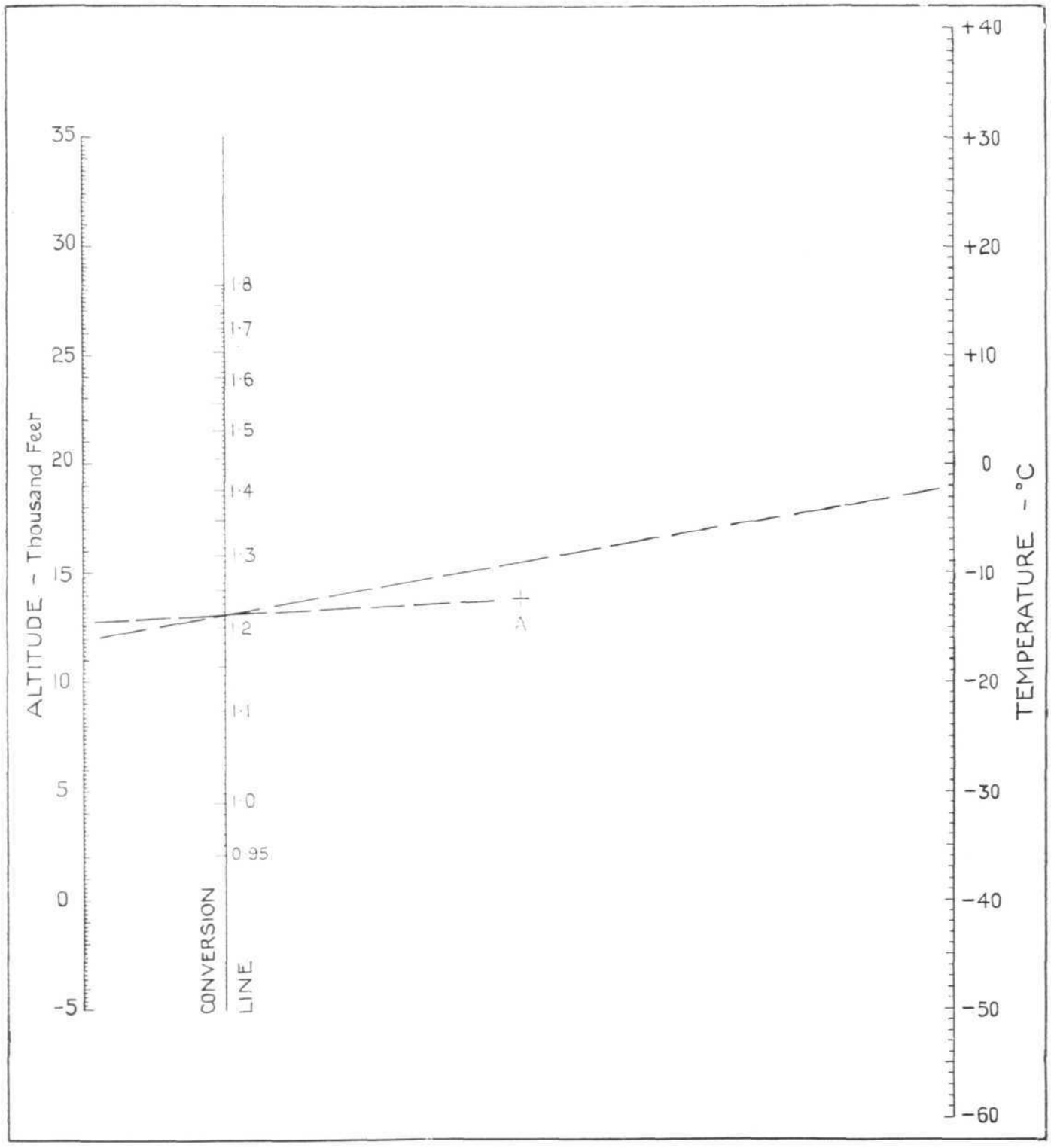


Fig. 1.

In the standard atmosphere there are definite relations between pressure, temperature, density, and altitude. In an atmosphere which differs from the standard, if the temperature and pressure are known, the density can be calculated and the height in standard atmosphere corresponding to this density obtained from a curve or from tables.

The calculation is based on the assumption that Boyle's law applies throughout.

t = temperature, degrees Centigrade.
p = pressure in inches of mercury.
ρ = density, mass per unit volume, lb.-ft.-sec.

Then, up to the lower limit of the isothermal atmosphere

$$\rho = \frac{0{\cdot}7364\ p}{(t + 273)g}$$

Above this altitude (35,332 ft.)

$$\rho = 0{\cdot}003378\ \frac{p}{g}.$$

The Reduction Chart given in Fig. 1 enables the reduction of observed data to conditions of standard atmosphere to be made without any calculations or reference to density curves or tables. It will be seen that it has not been prepared for use for greater heights than 35,000 ft.; as even in these days of supercharged engines such altitudes are not commonly attained on flight tests.

It must be understood that the chart is intended for use only in the reduction of height readings as taken from a standard altimeter. An altimeter is simply an aneroid barometer calibrated to read altitudes instead of pressure, and in the standard altimeter the height readings are those corresponding to pressures in standard atmosphere; the height reading being, therefore, a measure of the atmospheric

pressure. Such an instrument is not adjusted to give a zero altitude reading at the commencement of a flight.

In the calibration of the older instruments an isothermal atmosphere was assumed, the temperature selected being 10° C. As such instruments are never used for the purpose of obtaining reliable test data it is not worth while discussing them at length.

The chart is used in the following manner :—

From the flight test report the aneroid height and corresponding temperature are noted. A straight edge is laid across the chart joining these values on the altitude and temperature scales, and the point at which it crosses the conversion line is marked. A straight line drawn through this point and the point A when produced will cut the altitude scale at the corresponding height in standard atmosphere.

For example, if the aneroid height is 12,000 ft., and the temperature at that height is —2° C., the dotted lines drawn on the chart show the construction necessary to find the height in standard atmosphere, viz., 12,800 ft.

The value given by the scale on the conversion line at the point at which the lines cross it is the figure by which the indicated airspeed at the height must be multiplied to convert it to true air speed.

In reducing observed performance data to conditions of standard atmosphere the corrections to observed aneroid heights are made on a density basis, as has already been explained. This necessitates the commonly made assumption that the engine power is constant for constant density. This is not strictly accurate, as the factor for reducing engine power at ground level to power at altitude is

$$F = p^a$$

where F is the factor, p is the relative pressure, and a is a figure variously given as from 1·0 to 1·33. A commonly used value of a is 1·05.

A more accurate value of F is probably given by

$$F = p^{1-a\sigma a}$$

where F and p are as before, σ is the relative density, and a is a figure varying with the altitude.

The error introduced by assuming constant power at constant density is inconsiderable, and, unless great accuracy is required, can be neglected.

The method suggested for the reduction of data on climbing tests to conditions of standard atmosphere is the first described in N.A.C.A. Report No. 216; corrections being applied to height observations only. An example will make this clear.

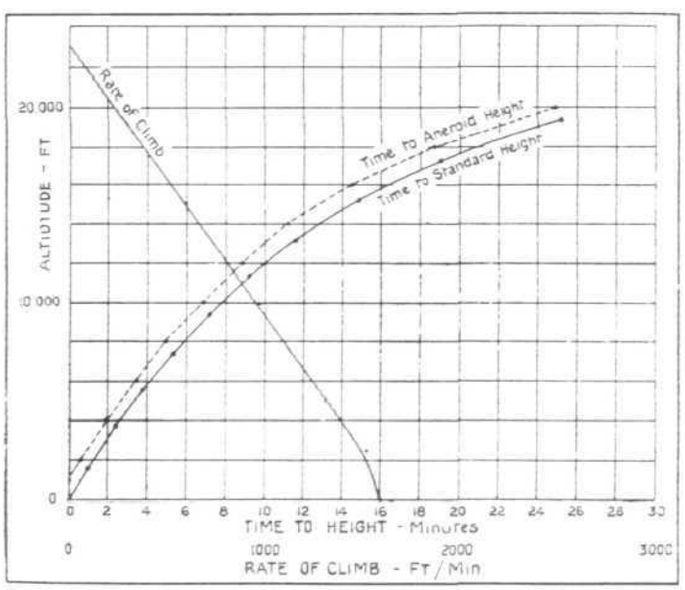


Fig. 2.

Table I gives times to aneroid heights, while Table II gives times to standard heights. From each height interval and the corresponding time interval we can find the mean rate of climb over that height interval, and by plotting the curve of time to height against altitude we can deduce the rates of climb at various altitudes, and the ceiling.

The following table gives a series of observations from an imaginary flight test.

TABLE I

Aneroid Height. Ft.	Time to Height. Mins.	Air Temperature. °C.	Indicated Air Speed (level). M.P.H.
1,000	—	— 11·0	150
2,000	0·6	— 7·3	—
4,000	2·0	— 5·0	—
6,000	3·4	0·0	—
8,000	4·9	— 5·8	—
10,000	6·8	— 9·8	123
12,000	8·8	— 13·8	—
14,000	11·2	— 19·0	—
16,000	14·4	— 23·0	—
18,000	18·6	— 26·1	—
20,000	24·8	— 30·2	94

Using the chart as described, the following table is obtained.

TABLE II

Standard Height. Ft.	Time to Height. Mins.	Air speed Multiplier.	True Air Speed (level) M.P.H.
600	—	1·08	151
1,600	0·6	—	—
3,800	2·0	—	—
5,600	3·4	—	—
7,400	4·9	—	—
9,400	6·8	1·155	142
11,400	8·8	—	—
13,200	11·2	—	—
15,200	14·4	—	—
17,300	18·6	—	—
19,400	24·8	1·36	128

It is not necessary to plot the curve of times to aneroid heights; though this has been done in Fig. 2 for purposes of comparison with the corrected curve.

Since the climb has not started from zero altitude in standard atmosphere, but from 600 ft., we assume that the rate of climb from 0 to 600 ft. is the same as that from 600 ft. to 1,600 ft. To get times from ground level we must, therefore, add 0·36 mins. to all the times given. This gives 600 ft. in 0·36 mins., 1,600 ft. in 0·96 mins., 3,800 ft. in 2·36 mins., and so on.

The curve of corrected times to heights against standard heights is drawn in Fig. 2.

The slope of the tangent to this curve at the point representing any height gives dH/dt, the rate of climb at that height in feet per minute.

A series of points so obtained is shown in Fig. 2, and a line drawn through them enables the rate of climb at any height to be read from the figure.

The absolute ceiling is reached where this line cuts the altitude axis, and the rate of climb becomes zero. In this case the absolute ceiling is 23,000 ft.

It will be noticed that the points do not fall exactly on the line, and in practice it may be found that they are even more scattered owing to the difficulty in keeping an aeroplane in its best climbing attitude.

Any points which lie very far out from the time to height curve are probably due to errors in reading time or aneroid height, and should be ignored.

TECHNICAL LITERATURE.

SUMMARIES OF AERONAUTICAL RESEARCH COMMITTEE REPORTS.

SUMMARY BY THE SECRETARY, ENGINE SUB-COMMITTEE OF A "REPORT ON ANTI-KNOCK INVESTIGATIONS."

By A. EGERTON, F.R.S., and S. F. GATES, B.Sc., M.A.

R. & M. No. 1079 (E. 24). (13 pages and 3 diagrams.) December, 1926. Price 9*d*. net.

The first investigations described in this report are those relating to the detonation of gaseous mixtures in tubes, the gas being ignited by a high-tension spark and the progress

of the flame recorded photographically on sensitised paper travelling at a speed of some 10 metres per second. Under uniform conditions, which had to be determined experimentally, it was found that detonation started consistently at the same position in the tube, and experiments were carried out with acetylene-oxygen and pentane-oxygen complete combustion mixtures to determine the effect on this position of (*a*) varying the proportion of diluent gas; (*b*) varying the nature of the diluent (N_2, O_2, A, CO_2 and excess fuel); (*c*) varying the initial pressure; (*d*) varying the initial temperature; and (*e*) adding "anti-knocks."

The report suggests the experiments show that the use of anti-knocks retards the initial processes of combustion, and that the anti-knock is acting as a negative catalist.

The report concludes with a brief description of some 10 theories that have been advanced in explanation of the action of anti-knocks, including Professor Callendar's Nuclear Drop Theory and the Pyrophoric Multiple Ignition Theory.

THE INFLUENCE OF THE AIRSCREW ON THE AIRCRAFT CHARACTERISTICS OF A STANDARD BRISTOL FIGHTER AEROPLANE.

By W. G. JENNINGS, B.Sc. Communicated by the Director of Scientific Research.

R. & M. No. 1083 (Ae. 262). (4 pages and 8 diagrams.) January, 1927. Price 4*d*. net.

The work described in this report was undertaken to investigate to what extent the aircraft characteristic curve obtained by the performance analysis described in R. and M. 985* is influenced by a change of airscrew.

Tests have been carried out on a standard Bristol Fighter aeroplane with a two-bladed airscrew and with a four-bladed airscrew similar to that used in the one-fifth scale model tests of R. & M. 937.† The method of procedure was that described in R. & M. 985, and the aircraft characteristic curves have been determined in each case. Some incidental remarks on the effect of slipstream on lift are included.

The aircraft characteristic curves are practically unaffected by a change of airscrew, and it therefore appears that the particular application of the methods of R. and M. 985 to tests of the same aircraft with different airscrews (see 8*b*, *loc. cit.*) involves no appreciable error due to the change of aircraft and airscrew interference.

Over the range of V *n*D dealt with in the full-scale experiments, the slipstream effect on lift with the four-bladed airscrew was found to be of the same order of magnitude, but somewhat less than that obtained in the model tests. The differences, however, are probably within the limits of accuracy of the full-scale tests.

The full-scale tests appear to indicate that the overall drag coefficient is not very different from the drag coefficient of the aircraft without airscrew.

* R. & M. 985. The reduction of aircraft performance tests.—By R. S. Capon.

† R. & M. 937. Measurements of lift, drag and pitching moment on the 1/5th scale model of the British Fighter with airscrew running.—By E. F. Relf and L. J. Jones, N.P.L.

LIFT AND DRAG OF THE BRISTOL FIGHTER WITH FAIREY VARIABLE CAMBER WINGS.

By E. T. JONES, B.Eng.; L. E. CAYGILL, B.Sc.; R. G. HARRIS, D.Sc., and H. M. GARNER, M.A.

Presented by Director of Scientific Research.

R. & M. No. 1085 (Ae. 264). (12 pages and 10 diagrams.) July, 1926. Price 9*d*. net.

In the report of the Design Panel (R. & M. 900) is collected a large amount of work on the scale effect on thin wings. The present report extends this investigation to the case of variable camber. The wings (supplied by the Fairey Aviation Co.) were very similar in section to that of the standard Bristol Fighter, and the camber could be varied by an articulation of the rear portion of the wings.

Full-scale (Part I) and model tests were carried out with four wing camber settings, namely, with the camber the same as the standard Bristol Fighter—position 1; camber decreased by an upward rotation of 5·1° of the rear portion of the wing—position 2; and camber increased by a downward rotation of 8° and 15·7°—positions 3 and 4, respectively The model measurements were made on a one-tenth scale model at wind speeds of 40, 60 and 90 ft./sec. (Part II). Corrections for channel interference, etc., have been applied to the model results, and the results are compared with the full-scale (Part III).

The full-scale and model lift and drag curves are in fair agreement. The full-scale and model (60 ft./sec.) values of the maximum lift coefficient are:—0·526 and 0·588; 0·583 and 0·615; 0·637 and 0·650 for the camber settings, 1, 3 and 4 respectively. The full-scale minimum drag coefficient is 0·0050 less than the model (60 ft./sec.) for camber setting No. 2. A similar difference exists at low lift coefficients for camber setting No. 1. For camber settings 3 and 4, the drag was not investigated below lift coefficients of 0·33 and 0·48 respectively. The full-scale drag coefficients at these lift coefficients are about 0·006 and 0·008 below the model values.

PRELIMINARY REPORT ON THE FITTING OF SLOTS AND FLAPS AND SLOT AND AILERON CONTROL TO A BRISTOL FIGHTER.

By H. L. STEVENS, B.A.

Presented by the Director of Scientific Research.

R. & M. No. 1088 (Ae. 267). (3 pages and 2 diagrams.) February, 1927. Price 4d. net.

The slot-and-aileron control has been fitted to several aeroplanes with satisfactory results, but previous experiments have related to wings with thin sections. The present report describes the lateral control of a Bristol Fighter aeroplane fitted with slot-and-aileron control combined with slots and flaps on the rest of the wing, which has thus been converted into a high lift section.

It was found that the slot-and-aileron control was more effective when the remainder of the wings was also slotted, but in this case the slots must operate from the open condition, otherwise the control is very difficult. With the main flaps down 15 deg. and the slots open, a maximum lift coefficient of 0·855 was obtained.

Previous experiments on the slot-and-aileron control are reported in R. & M. Nos. 968* and 1051.†

* Full-scale tests of a new slot-and-aileron lateral control. By H. L. Stevens.

† Second report on full-scale experience with the slot-and-aileron control fitted to a Bristol Fighter.—H. L. Stevens.

A DISTANT-READING INSTRUMENT FOR THE MEASUREMENT OF SMALL DISPLACEMENTS.

By E. F. RELF, A.R.C.Sc., and L. F. G. SIMMONS, M.A., A.R.C.Sc.

R. & M. No. 1092 (Ae. 271). (4 pages and 2 diagrams.) April, 1927. Price 4*d*. net.

This report describes an instrument suitable for measuring forces under conditions which preclude the use of an ordinary balance. The method adopted was to cause the force to be determined to deflect a very stiff spring, and to measure this deflection by an electrical method. The measurement depends upon change in mutual inductance between two coils, mounted on an iron core in which there is an air gap, when the width of the gap is changed.

The device is to be used first on a whirling arm at the National Physical Laboratory for measurements of yawing and rolling moments due to yawing on a Bristol Fighter aeroplane model. The instrument will also be suitable for measuring the forces and moments on a model spinning in a wind tunnel.

TORSIONAL VIBRATION IN ENGINES. EFFECTS OF FITTING A DAMPER, A FLYWHEEL, OR A CRANKSHAFT-DRIVEN SUPERCHARGER.

By B. C. CARTER, D.I.C., A.M.I.Mech.E. Presented by The Director of Scientific Research.

R. & M. No. 1053. (E. 22.) (37 pages and 20 diagrams.) February, 1926.

A vibration damper is being fitted to an engine suspected of having torsional resonance in the region of its normal speed, and it is important to know what is the minimum moment of inertia needed for the damper to be effective.

Other quantities to be determined are: the most suitable stiffness for the connecting shaft, the necessary shaft strength and the horse-power to be dissipated by the damper under the conditions that make this a maximum. The present investigation was initiated to throw light on the subject generally.

In the mathematical working the damper is assumed to be of the Lanchester viscous-friction type, but the investigation can be used in relation to the solid-friction type.

A damper of known polar moment of inertia is assumed to be driven by a shaft of known stiffness. Damping is assumed to occur within the engine itself, but not in the damper driving shaft or bearings. The engine is assumed to be either of single-crank type or of multi-crank type, in which the crank portion of the shaft is very stiff relative to the shafting between the airscrew (or large flywheel) and the first throw.

Expressions are derived for the horse-power absorbed in the damper under any set of conditions, and for the magnitude of torque variation in the damper drive.

The effect of the damper is virtually to lower the speed of synchronism to an extent depending upon the moment of inertia of the damper flywheel and the value of the damper coefficient D.

To produce effects of practical utility it appears that the damper flywheel needs to have a polar moment of inertia at least equal to about one-half that of the total crank mass when the journals and cranks are relatively rigid.

A second case is treated where a viscous friction damper or a flywheel is connected electrically to the crank mass. Such a system can vibrate freely in two different ways, and there are thus two peaks to the amplitude speed curves for forced vibrations.

Experiments are to be made of the direct variations in a multi-crank engine in addition to experiments on a single-crank engine, so as to obtain data illustrative of the theory developed in this report.

LATERAL STABILITY AT LOW SPEED. PART I.: MEASUREMENT OF ROLLING MOMENTS FOR THREE WINGS AT LOW RATES OF ROLL. PART II: PRESSURE MEASUREMENTS ON A WING WHILST ROTATING AT LOW SPEEDS.

By S. SCOTT HALL, B.Sc., D.I.C. Edward Busk Memorial Studentship, 1925–26.

R. & M. No. 1075. (Ae. 257.) (13 pages and 45 diagrams.) January, 1927. Price 1s. net.

In the general report of the Stability and Control Panel upon the control of stalled aeroplanes, R. & M. No. 1000* (see page 74), it is pointed out that experimental data have not been obtained for wings other than the conventional thin-wing biplane cell in general use in Britain:—

"For other arrangements of wings or for wings of thick section, or for monoplanes, the relative magnitude of these various factors (governing the motion in stalled flight) may differ somewhat from those which have been ascertained."

Part I of the present report gives the results of tests of a thick section monoplane wing upon a continuous rotation balance at low rates of roll. The results obtained when this wing is tapered and twisted are also given, and for comparison with these two wings, corresponding results for a wing of R.A.F. 15 section and rectangular plan form are included. The results include autorotation curves for all three wings, and cover a range of air speeds from 40 to 70 ft. per second The greatest scale effect is shown for R.A.F. 30 unmodified, and the least for R.A.F. 15. The effect of tapering the twisting the R.A.F. 30 aerofoil is to shorten the range over which autorotation occurs, but also to increase the "violence" of the motion. There is an indication (from comparison with other tests) that the shape of wing tips may have an appreciable effect on their characteristics in stalled flight.

Part II deals with the pressure plotting of the same R.A.F. 15 wing whilst rotating over the same range of speeds as on the rotation balance, for an airspeed of 40 ft. per second only. The method employs the use of a long oil-sealed bearing between rotating and stationary parts of the pressure system. The pressure distributions for different rates of roll are given, and curves of rolling moment coefficients have been prepared for comparison with those obtained by the previous method. It is considered that the results show the method employed to be satisfactory, and it is regretted that more time was not available to extend the experiments. Higher rotational speeds might be employed to give data on spinning.

* The lateral control of stalled aeroplanes. General Report by the Stability and Control Panel.

THE PRESSURES ROUND A CYLINDER ROTATING IN AN AIR CURRENT.

By A. THOM, B.Sc., Ph.D.

R. & M. No. 1082 (Ae. 261). (12 pages and 9 diagrams.) November, 1926.

These experiments were undertaken with the idea of obtaining information which might help to further the theory of the lift of a rotating cylinder.

The pressure distribution has been determined for four sections along the length of the cylinder 8 cm. diameter spanning the 2-ft. wind channel at $v/V = 2$, and for the centre section at $v/V = 0, 1, 2, 3$ and 4, where V is the wind speed and v is the peripheral velocity.

In some respects the results agree with what would be expected from the known lift, but the curves obtained show some interesting features.

These Reports are published by His Majesty's Stationery Office, London, and may be purchased directly from H.M. Stationery Office at the following addresses: Adastral House, Kingsway, W.C. 2; 28, Abingdon Street, London, S.W.1; York Street, Manchester; 1, St. Andrew's Crescent, Cardiff; or 120, George Street, Edinburgh; or through any bookseller.

MR. DRIGGS' ARTICLE ON PERFORMANCE

In THE AIRCRAFT ENGINEER of September 22, 1927, a small section of Mr. Driggs' article on Aircraft Performance was inadvertently left out. This occurred on page 62, in the last column. The section omitted is given herewith, and should be inserted 18 lines from the bottom of the last column, between "Absolute Ceiling = 22,100 ft. (flight test)" and the next paragraph which commences "A large portion," &c.

Case II:—

$$A_w = \frac{K_l S A_p^{1/2}}{93{\cdot}6\, K_{y\,max.}} = \frac{1{\cdot}0 \times 27{\cdot}7 \times 2{\cdot}77}{93{\cdot}6 \times 0{\cdot}00397}$$

$A_w = 206$ sq. feet.

Actual $A_w = 108$ sq. feet.

Therefore Case II should give the best results.

$$P_R^{5/4} = \left(0{\cdot}00000872\, F_r V_{MP}^3 + \frac{F_i}{V_{MP}}\right) \frac{1}{F_p e_{max.} K_p}$$

$$V_{MP} = 1{\cdot}1\, V_{min.} = 1{\cdot}1 \sqrt{\frac{W}{A_w K_{y\,max.}}} = 59{\cdot}1 \text{ m.p.h.}$$

$$K_p = \left(\frac{59{\cdot}1}{115}\right)^{1/2} = 0{\cdot}716$$

$$P_R^{5/4} = \frac{0{\cdot}01113 + 0{\cdot}0091}{0{\cdot}1106 \times 0{\cdot}784 \times 0{\cdot}716}$$

$$= 0{\cdot}326.$$

From Fig. 4,

Ceiling = 22,450 feet.

Ceiling = 22,100 feet (flight test).

AN OMISSION

In Mr. Mettam's article on "Handicapping by Formula," published in THE AIRCRAFT ENGINEER of July 28, 1927, the first sentence at the top of the left-hand column on p. 47 should read: "k_{L_1} and k_{L_2} must vary in a manner, &c." Will readers wishing to have their copies correct kindly make this addition.

FLIGHT

AIRISMS FROM THE FOUR WINDS

Mrs. Grayson's Vain Endeavours

IT has not been the happy experience of some of the Atlantic entrants to fail in the struggle three times and survive. Mrs. Grayson, the American, has had this fortunate misfortune. Her machine, the "Dawn," a Sikorsky amphibian, fitted with twin Wright "Whirlwind" 220 h.p. engines, was dealt with technically in FLIGHT for October 20. The trouble that has apparently caused most of the failures has been the desire to lift too great a load of fuel. Altitude could not be gained, and over 200 gallons of petrol had to be released on two occasions. The last attempt, on October 23, was the most promising. The machine got 500 miles out from the Maine coast, but then the port engine developed a defect, and the machine lost height. About 1,500 lbs. of petrol were released, and the return flight begun almost with one engine. They located the steamer, Coahoma County, as a precaution, but then decided to reach Old Orchard again, and were successful. The pilot was Mr. Wilmer Stulz and navigator, Mr. B. Goldsborough. The goal was Copenhagen.

Japanese Airship Disaster

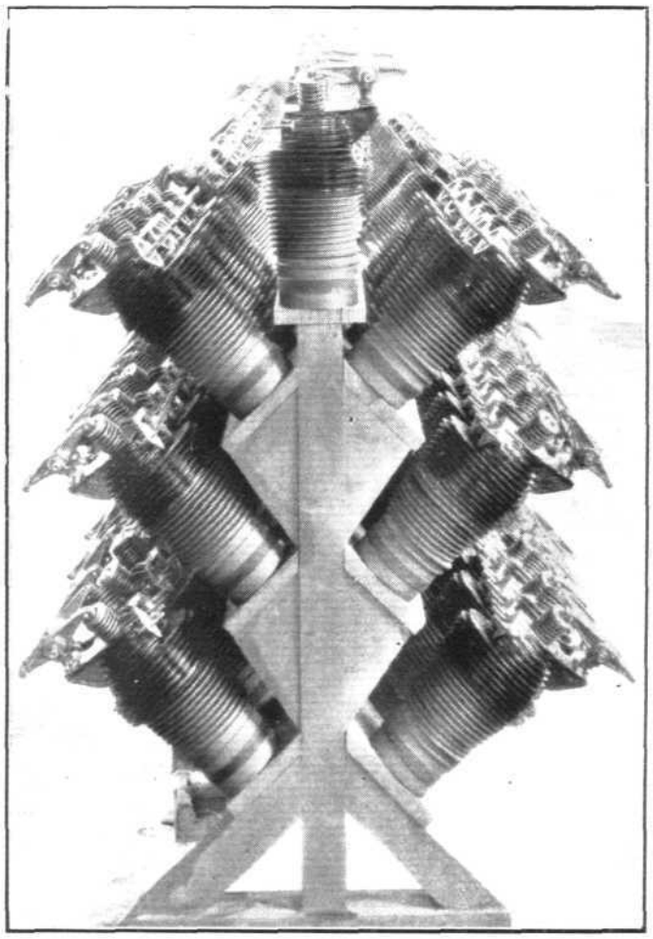
AIRSHIP news is rare in these heavier-than-air days. Japan lost its only airship recently, when it was forced to descend in the sea off the Izu Peninsula owing to engine trouble, and subsequently burst into flames. The crew was rescued and one member was badly hurt. The N.3 was recently bought from the Italians, and was similar to the "Norge," which made the flight to the North Pole.

By Airship to the North Pole

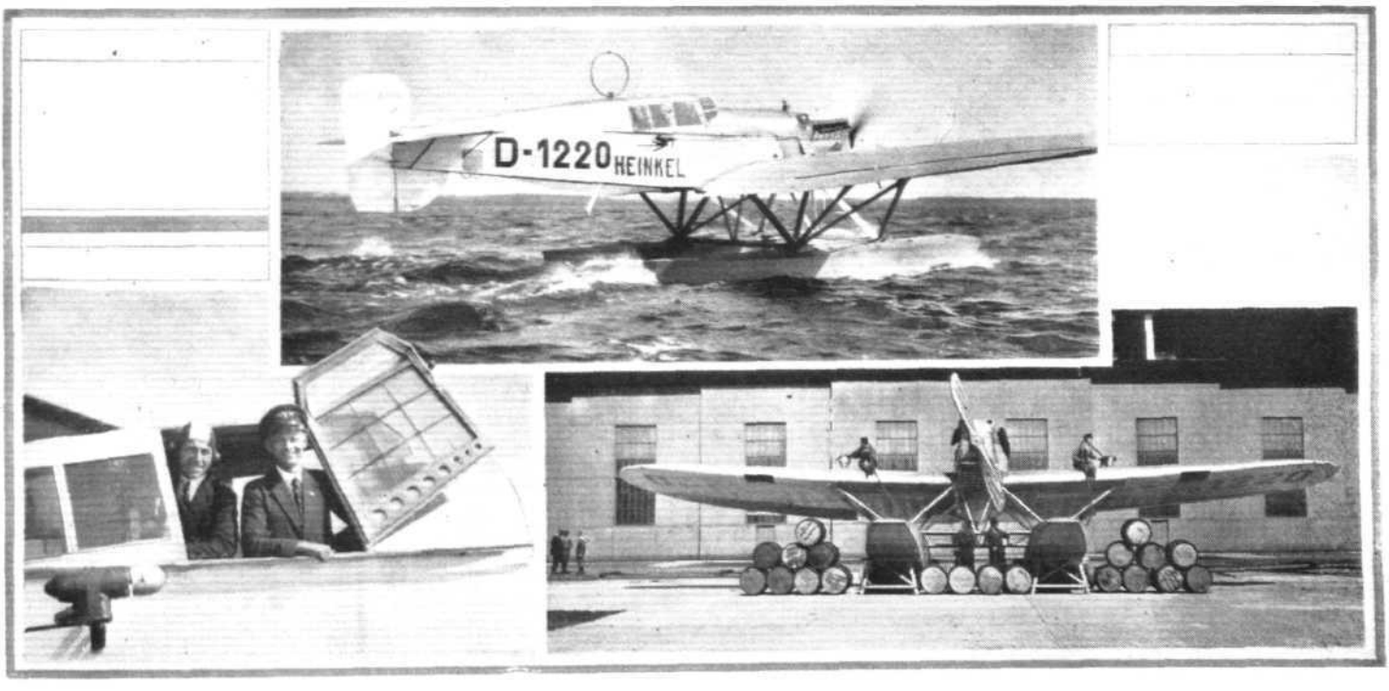
GENERAL NOBILE, the famous Italian airship designer, is planning a new air expedition to the North Pole. He will use a new semi-rigid dirigible and make several circuits of the Pole zone and sound in unknown seas. The start will be made from Spitzbergen. His ship will differ very little in general design from that which carried out the previous trip to the North Pole. It will fly the Italian flag.

Canadian Pioneer Airman Disappears

COMTE JACQUES DE LESSEPS and his pilot and mechanic left Gaspe, Quebec, on October 18, in a seaplane, for a point 75 miles away, called Val Brillant. They became long overdue, and their fate has now been assumed with the discovery of the wreckage from their seaplane on October 21. It appears, unfortunately, that they were all drowned. The Comte was the son of the originator of the Suez Canal, and an aviation pioneer in Canada.



"THINGS ARE NOT ALWAYS WHAT THEY SEEM": Not a new Armstrong-Siddeley engine, but a stack of cylinders in the shops at Coventry.



A GERMAN ATLANTIC ATTEMPT: On October 12, the German pilot Merz left Warnemünde in a Heinkel H.E.6-D 1220 seaplane, 830 h.p. Packard (not a Junkers, as previously reported) for America, via the Azores, and is at present held up at Lisbon. Our pictures show:—(Top) the machine starting on its flight; (left), wireless operator Bock and pilot Merz; (right), filling up with 4,000 litres (882 gals.) of fuel.

Bernardi's Belated Speed Record

IT is reported from Rome that a Macchi seaplane, one of the Schneider machines, presumably, touched 301 m.p.h. in a record attempt by Major M. de Bernardi. He flew the international course off the Lido on October 22, and averaged this speed in four attempts, two in each direction, on the 6-km. course. The famous pilot had waited in Venice since the race to make this attempt on the speed record.

The Victor on View

OUR Schneider victor, the Supermarine-Napier S.5, will be placed on view in the Horse Guards Parade, London, when it returns from Venice. The public will be able to inspect it about the first week in November.

French Pilots' Progress

THE brilliant French airmen, Capt. Costes and Lieut. Le Brix, who recently made the first non-stop crossing of the Southern Atlantic, may now fly up to New York, instead of concluding the successful flight at Buenos Aires, which they reached on October 20.

Khartoum-Kisumu Mishap

THE D.H. "Pelican," which crashed again on this air line in East Africa, as reported in FLIGHT last week, was completely wrecked, and it seems unlikely that further survey flights will be made. It is reported that negotiations are taking place with a company in which Sir Alan Cobham is interested for a combined service between Bulawayo and Alexandria by the two companies.

Lieut. Koppen's Return

THIS Dutch pilot reached Calcutta from Bankok on October 21, in the course of his return flight from Batavia, and Karachi on October 23. From the latter place he arrived at Bander Abbas on October 24.

French Far-East Flight

CAPT. CHALLE, the French pilot, reached Saigon on October 21, which completes his flight to the East from France.

German Atlantic Flights

THE second German machine D.1220, which is also trying to fly the Atlantic, is still waiting at Lisbon for fine weather to reach the Azores. It started at dawn on October 21 from the Tagus but was forced to return 15 mins. later owing to a defect in an oil pipe. Incidentally, this machine is a Heinkel seaplane and not a Junkers. Its companion machine, the D.1230, which has already spanned the sea to the Azores with the Austrian actress, Fraulein Lille Dillenz, on board, is still held up there through bad weather. It has now to face the hazardous journey to Newfoundland.

Great Flying-Boat Cruise

THE four R.A.F. "Southampton" flying-boats are making the expected successful progress. After leaving Cattewater, Plymouth, under the command of Group-Captain H. M. Cave-Brown-Cave, on October 17, they reached Hourtin, the seaplane station near Bordeaux, the same day, having had a fine flight. The next stage was Marseilles, which was reached on October 19, the flight taking about four hours. On October 21 the boats left Marseilles and arrived at the Royal Italian seaplane base in the Island of Nisida, near Naples, in the afternoon. The weather had been splendid and the engines behaved perfectly. The crews were assisted by the French and Italian authorities, and welcomed to the base by the British Consul, General, Mr. Huckin, Wing-Commander Fletcher, and the Italian officers. They stayed here until October 25 and then went on to Brindisi, so that now they are in the very South of Italy. No attempt is being made to carry out the flight in "record" time, a few days' stay being made at various places.

Dr. Langley's Assistant Dead

MR. C. M. MANLY died at Kew Gardens, Long Island, on October 17. He was an aviation pioneer and an assistant to Dr. S. Langley, for whom he made test flights in 1903. During the war he was a consulting engineer to the aviation section of the British War Office. He was 51 years of age.

The "Los Angeles" to Fly to Ottawa

THE U.S. airship "Los Angeles" will fly from Lakehurst Aerodrome, New Jersey, on October 29, with Sir Philip Sassoon, who is now visiting America, on board. The flight will take from 8 a.m. to 3 or 4 p.m. A party of British and American airmen will also be on the airship.

THE ROYAL AIR FORCE MEMORIAL FUND EXECUTIVE COMMITTEE

A MEETING of the Executive Committee of the above Fund was held at Iddesleigh House, October 12, at which the following Members were present:—Lord Hugh Cecil (Chairman), Dame Helen Gwynne-Vaughan, Mrs. B. H. Barrington-Kennett, Mrs. L. M. K. Pratt-Barlow, Sir Charles McLeod, Bart., Air Marshal Sir John Salmond, Air Vice-Marshal Sir Philip Game, Air Vice-Marshal Sir H. R. M. Brooke-Popham, Air Commodore F. C. Halahan, Air Commodore E. R. Ludlow-Hewitt, Lieut.-Comdr. H. E. Perrin.

The usual list of donations and subscriptions which had been received since the last meeting, held on June 15 last, was laid on the table, and the attention of the Committee was drawn to the notable donation, viz., a sum of Rs. 8,118, which had been received from Air Vice-Marshal Sir Geoffrey Salmond, K.C.B., Air Officer Commanding, Royal Air Force in India, and which was the balance of proceeds of an air display given at Delhi in February last by units of the Royal Air Force in India, and which donation realised the sum, in English money, of £604 13*s*. 2*d*., and the Chairman was requested by the Committee to write a special note of thanks to Sir Geoffrey Salmond to thank him and those associated with him for this very handsome donation to the fund.

The amounts of grants for the period of four months since June 15 amounted to £2,659 6*s*. 6*d*.

Through the kindness of an officer now serving in the Royal Air Force, the Committee have been able to make a profit of nearly £20 on the sale of a book of R.A.F. Songs and Verses, several hundreds of copies of which have been sold in the Air Force and to the public.

With regard to the commemoration of Armistice Day, the Committee, as usual, authorised the purchase of a wreath, to be placed at the foot of the R.A.F. War Memorial on the Victoria Embankment on Armistice Day, which falls this year on Friday, November 11, and they sanctioned, at the same time, the provision of a wreath to be laid at the foot of the R.A.F. Bay of the Scottish National War Memorial on Edinburgh Rock, which was unveiled by H.R.H. the Prince of Wales on July 14.

The next meeting of the Executive Committee will take place at the offices of the Fund on December 14 next, at 3 o'clock.

THE INTERNATIONAL LEAGUE OF AVIATORS PROGRESSES

THE International League of Aviators, of which Mr. Clifford B. Harmon is president, is making steady progress and its membership, embracing all parts of the world, is increasing day by day. Many famous pilots, such as Sir Alan Cobham, Col. Lindbergh, Pelletier d'Oisy, Rene Fonck, Costes, and Le Brix—who recently made the successful South Atlantic crossing—etc., are members of the League. A recent recruit is Col. W. A. Bishop, V.C., the Canadian Ace, while Miss Ruth Elder and Capt. G. Haldeman, whose recent Atlantic attempt terminated so dramatically, will be enrolled on their arrival in Paris.

Considerable progress is also being made with the League in South America, where a section, with Sen. Teodoro Ruiz as vice-president, is being formed comprising 11 South American States and Mexico. Central America already has its own group, comprising six States. It is expected that nearly 2,000 members will be enrolled during the next few months for the South American section. The respective Governments not only have given complete approval to the work of the League, but in most cases their presidents have agreed to lend their personal support as hon. presidents of the League.

That the International League of Aviators, with its sections in 20 countries, is to be an important factor in the active development of aviation is shown by a decision just taken to organise an air news service, which will co-ordinate and disseminate aviation information of a reliable character. The I.L.A. will collaborate in this with the established aero clubs of the various countries, manufacturers, member-pilots and the Guggenheim organisation, which is about to spend several million dollars along somewhat similar lines. Newspapers and writers, as well as others interested, should find the new service of value. Questions pertaining to aviation will be answered as promptly and as accurately as possible, and should be addressed to the central office of the International League of Aviators and the "Vieilles Tiges" at the Clos Normand, Bois de Boulogne, Paris. Under the joint direction of Mr. Clifford B. Harmon and M. Leon Bathiat, presidents of the two organisations, an important start has already been made in the collection of aviation data, with photographs and documents covering the principal events in air progress over a long period of years.

FLIGHT
AIRCRAFT ENGINEER AIRSHIPS

DEATH OF COLONEL VINCENT NICHOLL, D.S.O., D.S.C.

IT is with very sincere regret that we have to record this week the death, on October 20, of Lieut.-Col. Vincent Nicholl, D.S.O., D.S.C., from pneumonia following an operation. As our readers will probably know, Col. Nicholl was a director of the Fairey Aviation Company, where his great administrative qualities, coupled with a strong personality and a great charm of manner, won him both respect and affection. His passing is a serious loss to aviation, difficult at the moment to estimate at its full.

It will probably be a surprise to many to learn that Vincent Nicholl's first connection with aviation was when as one of a party of four Cambridge undergraduates he shared in the design, construction and flying of a glider at Eastchurch in 1913. The party camped in a shed on the aerodrome, spent all their time in the construction and operation of their machine, and contributed not a little to the general cheerfulness of Eastchurch in those pre-war days.

On the day war broke out they joined up "en bloc," and three of them (Vincent Nicholl, M. E. A. Wright and F. G. T. Dawson) took their flying tickets at Eastbourne on the same day, and Nicholl was launched on a Service career that was to earn him the D.S.O., the D.S.C., and the rank of Lieut.-Col. by the age of 25—the youngest man in the Air Force to hold this rank.

He returned to Eastchurch as a Flight-Sub-Lieutenant and, following appointments at Calshot, Gosport and Whitley Bay, he went to Great Yarmouth, where he quickly became prominent. He was first at Yarmouth Station under Wing Commander de Courcey Ireland, and subsequently under Wing Commander C. R. Samson in 1916, and later was himself in command. Here he spent nearly three years and distinguished himself alike by his exploits as a pilot and his qualities as a Commanding Officer.

For his courage and tenacity in attacking a Zeppelin he was awarded the D.S.C. in 1916. He was voted as a pioneer night flier, and for his endurance on long sea patrols on both flying boats and land machines.



The late Lieut.-Col. Vincent Nicholl, D.S.O., D.S.C.

The exploits of the Yarmouth boat patrol are well known in the annals of the R.N.A.S., and the name of Vincent Nicholl will always be connected with it. One remarkable incident in which he figured will be well remembered by those concerned. Nicholl and Major (now Group Captain) Robert Leckie had landed in an "F" boat out in the North Sea to rescue the crew of a wrecked D.H.4, and with the additional weight on board the machine refused to rise again. It should be mentioned that earlier in the day they had been shelled by a German cruiser and one wing tip float was holed.

After some hours taxying their fuel gave out, and with seven people on board the damaged boat drifted for three days and nights through a mine field. The crew had no food and drank the radiator water. Men were placed on one wing tip to keep the damaged float clear of the water and the hull had to be continuously bailed. The first search-fleet sent out failed to find them and returned.

They had one carrier pigeon left on board, but were so far from the base and outside the pigeon's normal range that it was considered practically useless to release it. Nevertheless a message was written giving the position and attached to the pigeon. On release it first refused to leave, and after circling round returned and perched on the machine. Finally it was induced to go. That pigeon never reached Lowestoft but fell dead in a coastguard station. Had it fallen elsewhere the chances against it being recognised for what it was and its message reaching the proper quarters would have been negligible.

On the information given by the pigeon, another search was sent out, and finally found them within a few hours of sinking. Nicholl was subsequently awarded the D.S.O. for this exploit. The rescuing cruiser arrived back at 3 a.m. It is characteristic of Vincent Nicholl that that same morning he set out on another boat patrol, as if nothing had happened.

Leaving Yarmouth with the Distinguished Service Order and the Distinguished Service Cross to mark his success in that Command, he was for a time in command at Lincoln, and later in Belgium.

In 1919 he left the Service, retiring with the rank of Lieut.-Colonel, and was elected to the board of The Fairey Aviation Company, where he joined his old associates of Eastchurch. His work at first was mostly test flying, but his ability as an administrator soon resulted in his activities being transferred to other fields, although he continued flying for his own amusement. He soon became Deputy Managing Director, and shouldered a large and increasing share of the responsibilities of administration of that company. His health had failed for the past two years, and following an operation, as already stated, he died of pneumonia in a London nursing home on Thursday, October 20.

Vincent Nicholl combined a very strong personality with a great charm of manner that endeared him very greatly to his many friends and acquaintances—enemies he had none. A man of high ideals, his outstanding characteristic was that of cool fearlessness. No situation ever ruffled him, and no setback ever diminished his cheerful optimism. His wonderful enthusiasm gave to every enterprise a touch of high adventure.

Following his brilliant war record, he elected to leave the Royal Air Force, although he had earned a position that promised a great future in that service, and nevertheless his success in civil life was equally striking. Although his short life was crowded with achievement, none who knew him doubted but that he was only at the outset of his career. His broad view and capacity to appraise a situation, coupled with his gift for decisive action, were his greatest assets, and he had ambitions in proportion to his ability.

Apart from his business capacity, it was his great personal qualities that so inspired the affection of his friends. His courage in the face of failing health was a high example, and from first to last of his painful illness, no one heard him utter a word of complaint. In the memories of those who knew him well, Vincent Nicholl will never die.

SAFETY DEVICES FOR AIRCRAFT

THE general impression with which one is left after attending the reading of the paper entitled " Safety Devices for Aircraft," by Mr. M. L. Bramson, before " The Royal Aeronautical Society, with which is incorporated the Institution of Aeronautical Engineers," on October 20, is that the new Handley Page automatic wing tip slot is regarded as promising to cure, or at least greatly to lessen, the dangers arising from, the stalling of aircraft, but that some form of stall indicator, such as the Savage-Bramson anti-stall gear, will still be an advantage.

In the introduction to his paper Mr. Bramson pointed out that there are two distinct methods of minimising or eliminating the risks of flying : either by inventing a new kind of flying machine altogether, or by tackling the different kinds of danger one by one. He confined himself entirely to a discussion of the latter method.

Before proceeding to outline the various safety devices in use on or suggested for aircraft, the lecturer briefly analysed the dangers of flying, pointing out that fortunately the number of civil accidents in this country was so small, and the number of hours likewise, but unfortunately, so small that the data hardly amounted to statistics. Mr. Bramson complained that statistics relating to service accidents are not available to the public, and said : " It cannot be said too strongly that knowledge so valuable and so dearly bought with the lives and treasure of the community belongs of right to the community as a whole, and not to a department of the Air Ministry. It is not suggested that that department is not making most intelligent use of that knowledge, *but there are active, inquiring and constructive minds outside the Air Ministry* (the italics are ours—ED.) who should be assisted in their efforts to reduce or eliminate the outstanding weaknesses of aeroplanes by having all available facts put before them." Using as a basis certain French statistics, Mr. Bramson stated that errors of judgment were responsible for 54 per cent., engine failures for 22 per cent., defects in aircraft for 11 per cent., weather for 5 per cent., and unknown causes for the remaining 8 per cent. of accidents.

Of the accidents due to " errors of judgment " a large percentage were usually associated with unintentional stalling. To avoid the risks arising out of stalling under these conditions, devices had been developed (*a*) to make stalling impossible ; (*b*) to improve control near the stall ; (*c*) to make involuntary stalling impossible while retaining the facility for stalling deliberately ; (*d*) to dissociate loss of control, nose-diving and spinning from the stall, and so render it relatively harmless. Of these, the lecturer thought undoubtedly the last-mentioned was the best, but also the most difficult solution.

(*a*) The Rohrbach Device

This took the form of a horizontal vane stably suspended in the airstream at the tail, and used to control the gear ratio between the control column and the elevator in such a manner that the tailplane movement produced by a given movement of the control column diminished as the incidence increased. A defect of this system was that when flying slowly near stalling angle, the pilot had least control when he required most.

(*b*) The de Havilland Differential Aileron Control

This device obtained lateral control by a decrease of lift on the appropriate side. Whilst considerably reducing the tendency to lose controls at angles just below the stall, the device could in no sense be regarded as a remedy for the stalling danger.

(*c*) The Savage-Bramson Anti-Stall Gear

This device, of which the lecturer is the inventor, consisted of two parts, an unstably-mounted vane and a warning unit. When the machine approached to some predetermined angular distance from stalling, say 14 degrees, the vane automatically changed position, thereby bringing into action the warning unit, which in turn exerted a forward push on the control column. According to adjustment, this push could be varied from about 7 lb. to 20 lb., according to the type of machine.

(*d*) The Handley Page Slot

Concerning this, the lecturer said he had to be somewhat superficial in his reference, as the new automatic slot was not yet ready for " general release." He expressed the view that this latest application of the Handley Page slot would prove to be one of the most important aerodynamic advances achieved during the last few years.

The rest of the lecture was devoted to a brief review of the following subjects : engine failure ; structural failure ; collision ; weather ; the Reid turn indicator ; weather dangers ; wireless direction finding ; and stalling as a weather risk.

THE DISCUSSION

The Chairman, Col. the Master of Sempill, in opening the discussion, said Mr. Bramson had given them plenty of scope, and called upon Dr. Robinson to open the discussion.,

Dr. Robinson said one thing about the paper had struck him as very gratifying, and that was the way in which the advantages of making all these safety devices automatic in action. On the subject with which he personally was most familiar, there could be no doubt that direction finding wireless was a great safety device, and he thought that if the transatlantic fliers on many of the recent flights had carried D.F. they would not have been lost.

Mr. F. Handley Page referred to the Schilovsky-Cook turn indicator, in which he was rather interested. This instrument had, he thought, the great advantage that it was electrically driven. Thus its sensitivity did not depend upon the forward speed of the machine, but was constant at whatever speed the aeroplane was travelling. The gyro was gravity controlled, and there was practically no friction, as knife edges were used. Moreover, the gyro ran at a very low speed, something like 1,200 r.p.m. Instead of a series of coloured lights, which did not light up until the machine commenced to turn, there were, in the Schilovsky-Cook instrument, two coloured glass panels, one red and green and the other green and red. So long as the machine was travelling straight, the pilot saw the dark glass, but on a turn to one side or other the lights showed red or green, according to which way the machine was turning.

On the subject of the anti-stall gear, with all due respect to the lecturer, he thought that if one provided full control beyond the stall, then there was no need for devices. At present, the trouble was that the pilot had to remember two sets of control rules. The things which he had to do in normal flight became things which he must not do after the stall. The result was that the pilot made mistakes.

Major Stewart thought the lecturer should have mentioned one thing in his paper, *i.e.*, the question of proximity to the ground, which was what was really important. On the subject of anti-stall gears, it should be remembered that a machine went through stalling twice in every normal flight, when taking off and in making a three-point landing. There was a danger there when the anti-stall gear was fitted. As regards the use of periscopes, these were very unsatisfactory, giving a very limited field of vision, and, in the case of the type using a ground glass screen, there was always the risk of reflections entirely blotting out the image. Col. Lindbergh had to use a periscope, because he was entirely shut in. As regards the problem of fog landings he thought the suggestion of Professor Lindeman, made some years ago, of mooring two balloons at different heights, was worth investigating more fully.

Air Vice-Marshal Sir Sefton Brancker, Director of Civil Aviation, expressed satisfaction with the lecturer's reference to the absence of accidents statistics on Imperial Airways. A very large percentage of crashes were undoubtedly due to stalling. As regards the Handley Page slot, when it was used for its original purpose of increasng lift over the whole wing, it was rather complicated and heavy for the advantages it gave, but in the new Handley Page automatic wing tip control slot, he thought they had really got something good. There was no extra complication for the pilot, the weight was negligible, and the cost equally so, except possibly for royalties which, presumbaly, Mr. Handley Page would demand. It was good that they had by this means been able to eliminate the spinning nose dive, but for fighting aeroplanes, he thought it might be dangerous if the machine could not be made to spin during an air fight.

The next danger to be tackled was that of collision, which would become more and more serious as the number of machines increased. On the subject of fog landing, the use of balloons had been turned down because with a ground fog and bad visibility above the fog, a condition frequently occurring, the balloons could not be seen, and constituted a danger. The leader cable was not yet regarded as being sufficiently far advanced to justify its use at Croydon. As regards the oval shape, he agreed with the lecturer that this added complication, as far as the pilot was concerned, but he was told by the experts that a closed circuit was necessary, and what they had to do was to make the oval very long, so that the curve was a very gentle one. He thought Dr. Robinson had been much too reticent on the subject of his own work. He was progressing very well with the wireless revolving beacon.

Mr. C. G. Grey said it was rather amusing to see how at last the aeronautical community was waking up to the importance of the slot. He personally, regarded the slot as curing anyway 90 per cent of their troubles. Hitherto the difficulty had been mainly one of weight, but in the latest type of automatic slot that had been overcome, and the automatic slot gave an utterly simple solution of the problem. He rather sympathised with the lecturer, because if Handley Page had not arrived, Mr. Bramson would probably have stood to make quite a good deal of money on his anti-stall gear. On the subject of spinning, he rather thought that a machine fitted with the new automatic slots *could* be spun ; one merely flew into the spin instead of stalling into it. As regards the arrival of Mr Handley Page, they were, of course very glad he had ' arrived, ' slot or no slot. (Laughter.)

Squadron-Leader Reid said the trouble with the Reid turn indicator was that when he designed the apparatus, he first went to the pilots for their opinions. What he should have done was to have gone to the technicians! As regards sensitivity, this was adjustable as it had been found that different pilots and different machines required different sensitivity. It might interest them to know that the Reid turn indicator had been in use on Imperial Airways machines since 1922. The latest model turned out by Vickers was really excellent. Instead of a number of different devices, it would be an advantage if one apparatus could be made to do everything. The Reid turn indicator seemed capable of being so used. He thought that *complete* automatic control would come in about five years.

The Chairman, Col. the Master of Sempill, said he would like to express his cordial agreement with the lecturer on the subject of keeping accidents investigations secret. Mr. Grey had mentioned the time taken before appreciating the slot. The same applied to the anti-stall gear, which was produced in 1925 but had only recently been tested out in service. Even ifthe Handley Page automatic slot was found to be the solution of the problem, he did think the Savage-Bramson anti-stall gear should at least have been adopted as a temporary expedient if nothing more. As regards the use of the turn indicator, he was surprised, on discussing with an individual directly concerned in a recent British long-distance attempt, to find that no turn indicator

FLIGHT
AIRCRAFT ENGINEER AIRSHIPS

was fitted, and to hear the view expressed that it was difficult to see the need for one!

Mr. Bramson, in replying to the discussion, said that although he held no brief for either of the two turn indicators mentioned, and had never flown with either of them, he imagined that he would prefer the instrument which gave the continuous indication. On the subject of control after stalling, it should not be forgotten that when this happened at a low altitude, the only time when a stall was dangerous, the machine was sinking at a rapid rate. Even if the machine was under perfect control in the stalled state, a reversal of the elevator control was still necessary to bring it out of the stall. He had given a good deal of thought to the question as to whether it was *ever* desirable to fly stalled, and had been unable to imagine any conditions under which this was desirable. Perhaps contributors to the discussion in writing would say something about that. Returning to the subject of sinking rapidly, in other words losing height rapidly, when near the ground, he thought the pilot should still be given warning that he was doing this, even if his machine was under control, and thus the anti-stall gear was still an advantage. As it happened, part of the Handley Page automatic slot action depended on incidence, as does the Savage-Bramson anti-stall gear, and thus could be made to serve as a stall indicator.

Mr. Bramson thought that in the future a combination of equipment might be used for fog landing. First the pilot would fly towards his aerodrome, guided by D.F. wireless. He would then pick up the signals from the leader cable and approach close to the aerodrome. For the last bit, the actual landing, it was conceivable that an acoustic listening post might be established on the aerodrome, which would judge when the machine was close enough, and would then, by wireless telephony, tell the pilot to land.

Major Stewart had referred to an aeroplane passing through the stalled state in taking off and in making a three-point landing. If a pilot wished to take off stalled, such as in the case of boggy ground, there was no reason why he should not do so. The stall indicator could be cut out, but even if it were not, the pilot could overcome the pull on the stick. Again, in making a three-point landing, the pull on the stick would indicate to the pilot when it was safe to pull back without making the machine "balloon."

On the subject of the Handley Page automatic slot doing away with the necessity for a stall indicator, he did not think that was a matter of any importance to anyone except perhaps himself and Mr. Handley Page. What did matter was that they appeared at last to be getting on towards safety from these appalling troubles.

THE ROYAL AIR FORCE

London Gazette, October 18, 1927.

General Duties Branch

The follg. are granted short service comms. as Pilot Officers on probation, with effect from and with seniority of Oct. 3:—M. H. Clare, A. G. Lester. The follg. Pilot Officers are promoted to rank of Flying Officer:—E. B. Steedman (July 12); R. A. Barnett, I. J. Fitch, R. J. Legg, A. A. Leslie, N. McLeod, R. R. Nash, N. C. Pleasance, E. F. Wain (Sept. 13). Flying Officer J. W. Stokes is transferred to Stores Branch on probation (Oct. 15); Flight-Lt. E. D. H. Davies is placed on half-pay list, Scale B. (March 25 and 26). The follg. officers are transferred to Reserve:—Flight-Lt. G. E. Newton, Class A. (Oct. 18); Flying Officer G. S. Smith, M.B.E., Class C. (Oct. 18).

Pilot Officer J. G. Foreman relinquishes his short service commn. on transfer to Royal Australian Air Force Reserve (Oct. 10); Flying Officer C. V. Williams resigns his short service commission (Oct. 19).

Accountant Branch

The follg. Flying Officers are transferred to Reserve, Class C (Oct. 22):—C. W. Cackett, C. P. Puckridge.

Medical Branch

Flying Officer B. L. Edwards, M.B., is granted a permanent commn. in this rank (Oct. 19); Flying Officer H. Penman, M.B., is promoted to rank of Flight-Lt. (Oct. 8).

RESERVE OF AIR FORCE OFFICERS

General Duties Branch

Flying Officer W. E. L. Courtney is transferred from Class A to Class C (April 20).

The commns. of the follg. Pilot Officers on probation are terminated, on cessation of duty:—

CLASS A.A.—G. B. Falconar (Sept. 28): B. P. W. Twist (Sept. 28).

Special Reserve

W. Hislop (Oct. 18).

Stores Branch

Flight-Lt. H. S. Alger relinquishes his commn. on completion of service, and is permitted to retain his rank (Sept. 12); Flying Officer E. G. Steer relinquishes his commn. on completion of service (Oct. 11).

AUXILIARY AIR FORCE

General Duties Branch

The follg. to be Pilot Officer:—No. 603 CITY OF EDINBURGH (BOMBING) SQUADRON.—J. H. Flynn (July 25).

ROYAL AIR FORCE INTELLIGENCE

Appointments.—The following appointments in the R.A.F. are notified:—

General Duties Branch

Group Captain C. E. H. Rathborne, D.S.O., to Wessex Bombing Area H.Q., Andover, pending posting to R.A.F. Station, Upper Heyford, 11.10.27.

Wing Commander N. J. Gill, C.B.E., M.C., to R.A.F. Depot, Uxbridge, 14.10.27.

Squadron Leader C. W. E. Foster to R.A.F. Depot, Uxbridge, 3.9.27.

Flight Lieutenants: A. D. H. Foster to R.A.F. Base, Calshot, 2.10.27. W. K. Mercer to No. 4 Sqdn., S. Farnborough, 17.10.27. E. H. Richardson to Air Ministry (Signals Branch), 19.10.27. W. Sanderson, A.F.C., to R.A.F. Training Base, Leuchars, 3.10.27. S. F. Vincent, A.F.C., to R.A.F. Depot, Uxbridge, 2.10.27. A. S. Ellerton, O.B.E., to Central Flying Sch., Wittering, 10.10.27. W. Elliot, D.F.C. to R.A.F. Depot, Uxbridge, 14.10.27. A. G. Thackray to R.A.F. Depot, Uxbridge, 3.9.27.

Flying Officers: W. A. Shorten to Aircraft Depot, India, 13.9.27. G. H. Smith to No. 25 Sqdn., Hawkinge, 3.10.27. J. S. Georgeson to No. 503 Sqdn., Waddington, 3.10.27. L. Dalton-Morris to No. 15 Sqdn., Martlesham Heath, 3.10.27. M. Brunton to No. 32 Sqdn., Kenley, 19.9.27. T. H. Carr to No. 22 Sqdn., Martlesham Heath, 29.9.27. V. F. Whatling, D.S.M., to H.Q. Coastal Area, 3.10.27. W. Dickison, D.S.M., to R.A.F. Base, Malta, 1.10.27., R. C. Wansbrough to R.A.F. Station, Kenley, 5.10.27. H. R. F. Baxter to Central Flying Sch., Wittering, 31.10.27. H. C. G. Dauncey to No. 22 Sqdn., Martlesham Heath, 12.10.27. T. C. Penna to Armament and Gunnery Sch., Eastchurch, 17.10.27. C. Guppy to R.A.F. Depot, Uxbridge, 12.10.27. L. E. Maynard to R.A.F. Depot, Uxbridge, 23.8.27.

Pilot Officers: J. E. A. Binnie to Record Office, Ruislip, 10.10.27. H. J. Walker to No. 503 Sqdn., Waddington, 4.10.27. M. Griffiths to No. 13 Sqdn., Andover, 24.9.27. C. K. Turner-Hughes to No. 56 Sqdn., Biggin Hill, 24.9.27. M. H. Clare and A. G. Lester to No. 5 Flying Training Sch., Sealand, on appointment to Short Service Commns, 3.10.27. D. K. Hewison to No. 14 Sqdn., Palestine, 21.9.27. A. O. Moore to No. 14 Sqdn., Palestine, 20.9.27. G. H. G. S. Jenkins to No. 207 Sqdn., Eastchurch, 4.10.27. H. H. Martin to No. 13 Sqdn., Andover, 6.10.27. A. R. Sarel to Sch. of Naval Co-operation, Lee-on-Solent, 10.10.27. H. B. Maughan to R.A.F. Depot, Uxbridge, 23.9.27.

Stores Branch

Squadron Leader A. J. Briddon to No. 10 Group, H.Q., Lee-on-Solent, 24.9.27.

Flight Lieutenant W. G. MacD. Nicholl to H.Q., Cranwell, 10.10.27.

Flying Officers: C. W. H. Moller to Storage Unit, Hawkinge, instead of to R. A. F. Station, Tangmere (Storage Unit), as previously notified, 3.10.27. F. C. Griffin to Aeroplane and Armament Experimental Estabt., Martlesham Heath, 10.10.27.

Pilot Officer H. M. S. Dawes to Night Flying Flight, Biggin Hill, 11.10.27.

Accountant Branch

Squadron Leader R. Whyte to Station Accounts Office, Hinaidi, 26.9.27.

Flight Lieutenant J. C. Brice to Station Accounts Office, Hinaidi, 26.9.27.

Flying Officers: W. J. Heneghan and D. J. Sherlock to Station Accounts Office, Hinaidi, 26.9.27.

Pilot Officer R. S. Sweet to R.A.F.M.T. Depot, Shrewsbury, 29.8.27.

Medical Branch

Wing Commander A. S. Glynn, M.B., to H.Q., Egypt, 27.9.27.

Flying Officer G. W. McAleer, M.B., to No. 1 Flying Training Sch., Netheravon, 10.10.27.

Legal Branch

Squadron Leader E. St. C. Harnett, O.B.E., to H.Q., Egypt, 16.9.27.

NAVAL APPOINTMENT

THE following appointment was made by the Admiralty on October 15:—

Commander W. G. Benn, to *President*, for special service outside Admiralty (Nov. 5), and lent to Air Ministry (Nov. 12).

◈ ◈ ◈ ◈

ACCIDENT TO THE FOCKE-WULF "ENTE"

IN our issue of October 6, we briefly recorded the fact that during a test flight with the Focke-Wulf "Ente" (described and illustrated in FLIGHT on September 29, 1927), one of the directors of the firm, Herr Wulf, who was piloting the machine, crashed with fatal consequences. We have now received from the Focke-Wulf firm further particulars of the circumstances of the crash.

After official examination of the wreckage, it can be stated that the accident was neither due to a constructional defect, nor to weather conditions. What has been established with certainty is that Herr Wulf intended to make a straight flight with one engine stopped, a manœuvre which he had previously carried out several times successfully. On this occasion, it appears that Herr Wulf, as previously, tilted the front plane laterally, to counteract the turning moment of the wing engine, and for some 15–20 secs. all went well. Then, for some reason which has not been explained, some disturbance in the balance between the outboard thrust of the engine and the lateral component of the lift of the tilted front plane took place. The machine went into a turn which became more and more rapid, and was accompanied by a dive. The pilot brought the front plane to its central position, and actually succeeded in converting the turn into a straight, steep glide. By this time, however, the machine had insufficient altitude, and hit the ground. Had the pilot been only a few feet higher at the start (the turn commenced at a height of but 80 m. (265 ft.)), there is every reason to believe that he would have been able to avoid the crash.

As it was, it appears to have been sheer hard luck which led to the pilot sustaining fatal injuries. The machine did not telescope, and the fuselage merely broke in two. Front plane, main plane, engines and control surfaces suffered relatively small damage.

It is pointed out that, as the laterally-tilting front plane is not a fundamental feature of the "tail-first" machine, but was incorporated to give extra directional control for use when one engine stopped, the accident is not really directly attributable to the "tail-first" principle in general. We gather that it is intended to continue the experiments in spite of the temporary set-back sustained by the accident.

CORRESPONDENCE

WING RADIATORS

[2161] Looking at some old photographs taken about 17 years ago, it is very interesting to see how a practice then in existence, which apparently for years has been discarded, is now returned to by some of our best designers, particularly on high-speed machines.

The feature I am speaking of is having a flat surface radiator underneath the centre section of the wings of the "Valkyrie" monoplane. This is very much like the practice of the surface streamline radiators now fitted to some of our fastest machines. I believe the radiators were built for Mr. Barber by Lamplughs. It shows that we, as pioneers in those days, had a few ideas, but looking at the machine on which I took my ticket now, it is inclined to give one a night-mare.

It would be interesting to know what other surface radiators of that type were fitted. I think Mr. Barber would certainly have the claim of being first in the field.

October 21, 1927. C. F. M. CHAMBERS

THE GUGGENHEIM COMPETITION

[2162.] I have read with much interest your editorial comments of June 16, and the views of various eminent engineers in your issues of June 23 and July 28 on the Safe Aircraft Competition.

Our technical advisers are preparing a note on the underlying technical problems of this competition, which will, no doubt, be of interest to your correspondents, but pending publication of this note, I should like to have the privilege of answering certain points that have been raised in regard to the actual conduct of the tests involved.

Major F. A. Bumpus speaks of "the extreme difficulty of obtaining a really fair comparison of merit as regards stick and unstick tests due to inevitable variation of wind." This difficulty has been fully foreseen by our technical advisers. If absolutely calm air is not obtainable tests of this character will be repeated under different wind conditions and curves of distances plotted against wind speed. Preliminary tests on a service plane and comparison with formulæ indicate that such a method will eliminate any possibility of unfairness.

In regard to tests of manœuvrability on the ground, Major Bumpus is quite correct in thinking that with a variable aerofoil machine, the wings would be set as for a slow-speed trial.

Major Bumpus further questions the advisability of all tests being carried out by the Fund's pilots and not by the entrant's pilot. In this regard I would like to quote Section 5 of Appendix 5. "All tests in the Competition will be carried out by pilots supplied by the Fund but contestants shall be given reasonable opportunities for instructing the Fund's pilot in the flying of their aircraft prior to the commencement of the tests." We must not forget that the object of the Competition is to ensure a plane which shall have desirable characteristics that can be developed by any pilot of average skill. Also if the Fund's pilots, observers and technical advisors are apparently at fault in any portion of the tests, contestants will have the right to appeal to the judges.

New York, October 14, 1927. HARRY F. GUGGENHEIM

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Mobiloil "Not Guilty"

IN connection with the account of the Zurich Meeting, published in FLIGHT of September 1, 1927, and in which appeared a statement to the effect that the German pilot Herr Lusser had had trouble with the Mobiloil in his Mercedes engine, we have received from the Vacuum Oil Co., Ltd., a communication pointing out that this was incorrect. That firm has received from Herr Lusser, of the Leichtflugzeugbau Klemm of Sindelfingen, a letter, the translation of which reads as follows :—"Herewith I am glad to state that a notice in FLIGHT of September 1, 1927 is based on an error. On the occasion of the 'International Flying Meeting in Zurich' I was not using Gargoyle Mobiloil. Therefore the lubrication trouble encountered cannot be traced to your oil. Respectfully Yours. (Signed) Robert Lusser." We are thus very glad to be able to correct any erroneous impression that may inadvertently have been created.

Sqdn.-Ldr. Reid Forming a Company

WE are informed that Squadron-Leader G. Reid is forming a company to market his various patents, including the very successful *Pilot Testing Device*. Mr. Fred. Sigrist of the H. G. Hawker Engineering Co., Ltd., is actively interested in the venture, and his practical experience and business acumen will be of great assistance.

"THE ROYAL AERONAUTICAL SOCIETY" WITH WHICH IS INCORPORATED "THE INSTITUTION OF AERONAUTICAL ENGINEERS"

Official Notice.

Silver Medal.—The inaugural meeting of the Council of the amalgamated, body was signalised by the award of the Society's Silver Medal to Mr. R. J. Mitchell, A.F.R.Ae.S., Capt. G. S. Wilkinson, A.F.R.Ae.S., and Mr. P. A. Ralli A.F.R.Ae.S., the three designers most concerned with the production of the S.5 which recently won the Schneider Trophy and broke the world's speed record for seaplanes.

J. LAURENCE PRITCHARD, *Secretary*

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IMPORTS AND EXPORTS, 1926-1927

AEROPLANES, airships, balloons and parts thereof (not shown separately before 1910).

For 1910 and 1911 figures see FLIGHT for January 25, 1912.

For 1912 and 1913, see FLIGHT for January 17, 1914.

For 1914, see FLIGHT for January 15, 1915, and so on yearly, the figures for 1926 being given in FLIGHT, January 20, 1927.

	Imports.		Exports.		Re-Exports.	
	1926.	1927.	1926.	1927.	1926.	1927.
	£	£	£	£	£	£
Jan. ..	494	1,850	130,049	49,021	—	—
Feb. ..	2,089	679	40,416	63,080	6,341	—
Mar. ..	1,001	7,087	92,840	106,478	9,758	2,270
Apr. ..	536	822	160,832	71,190	5,051	785
May ..	342	1,258	118,539	82,708	—	640
June ..	24,866	1,249	66,111	149,907	150	162
July ..	16,033	1,798	39,047	104,167	—	750
Aug. ..	21,401	2,453	146,129	78,742	1.035	—
Sept...	3,172	2,045	55,674	61,946	—	59
	69,934	19,241	849,637	767,239	22,335	4,666

* * * *

PUBLICATIONS RECEIVED

The Beginnings of Organised Air Power. By J. M. Spaight. Longmans, Green & Co., Ltd., 39, Paternoster Row, London, E.C.4. Price 17*s.* 6*d.* net.

India by Air. By the Rt. Hon. Sir Samuel Hoare, Bt., G.B.E., C.M.G. Longmans, Green & Co., Ltd., 39, Paternoster Row, London, E.C.4. Price 6*s.* 6*d.* net.

Songs in The Darkness. By Arthur Bennett. The "Sunrise" Publishing Co., Upper Bank Street, Warrington. Price 5*s.* net.

* * * *

AERONAUTICAL PATENT SPECIFICATIONS

(*Abbreviations :* Cyl. = cylinder ; i.c. = internal combustion ; m. = motor The numbers in brackets are those under which the Specifications will be printed and abridged, etc.)

APPLIED FOR IN 1926

Published October 27, 1927

14,058. A. LAMBLIN. Diaphragm pump. (255,427.)

16,353. SIR. W. G. ARMSTRONG, WHITWORTH AND CO., LTD., H. W. LEE and R. MORRISON. Means for taking-up leash in the transmission of motion. (278,074.)

20,001. DOUGLAS MOTORS, LTD., and C. G. PULLIN. Fixing of magnetos on i.c. engines. (278,140.)

APPLIED FOR IN 1927

Published October 27, 1927

7,090. J. L. MACVICAR. Aircraft. (278,250.)

12,407. BRITISH THOMSON-HOUSTON CO., LTD. Superchargers for i.c. engines. (271,074.)

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